

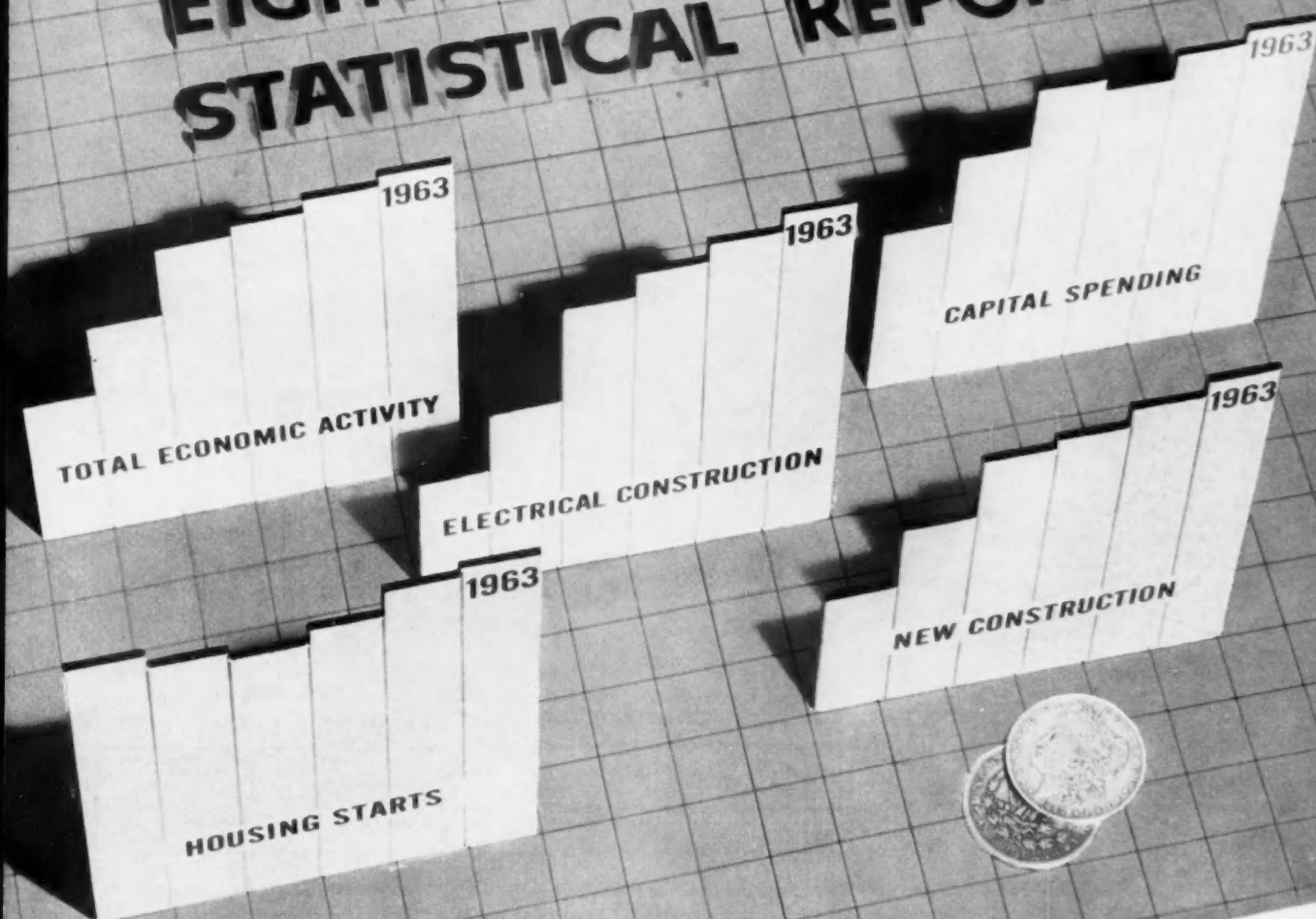
SEPTEMBER
1962

PRICE 75 CENTS

ELECTRICAL CONSTRUCTION AND MAINTENANCE

WITH ELECTRICAL CONTRACTING

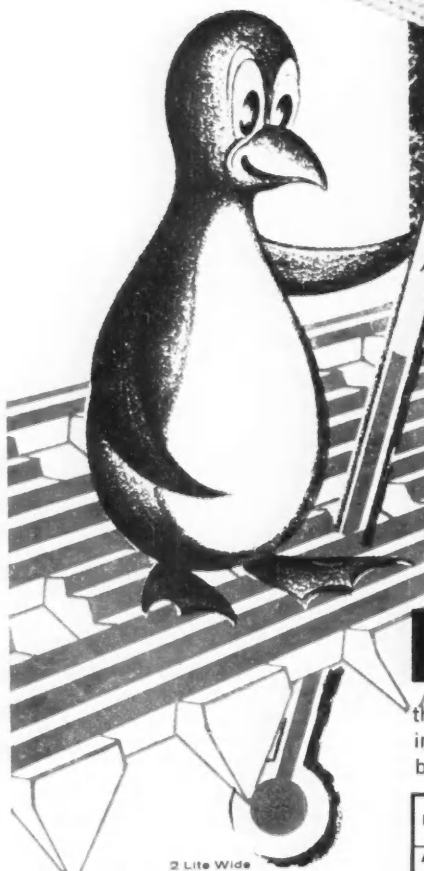
EIGHTH ANNUAL STATISTICAL REPORT



A MCGRAW-HILL PUBLICATION

61ST YEAR

beat
the heat
with
self-cooling
action



new
GUTH

PRISMAROUND*

the cool new beauty engineered to disperse lamp and ballast heat. The new, improved PRISMOID** Louver-Lens consists of hundreds of open prisms that breathe and allow air to circulate freely. Here's the result:

Luminaire	Max. Ballast-Case Temp.	Max. Capacitor Temp.	Max. Coil Temp.	Total Watts to lamps & Ballasts
4/40W "PRISMAROUND"	85° C.	67° C.	101° C.	184.1W
4/40W "Brand-X"	110° C.	92.5° C.	127° C.	158W

Cooler operation means longer life for lamps and ballasts and gives you 10-15% additional foot candles for your money. Extra thick $\frac{3}{8}$ " Prismaround plastic withstands more abuse, minimizes breakage and warpage.

Furnished in 2 light and 4 light widths, 4' and 8' lengths all with super-hard, gleaming white Acrylic finish.

send for your free copy of Prismaround folder #31

* T.M. AND PATS. PEND.
** U.S. PAT. NO. 2,904,673

THE EDWIN F. GUTH CO., 2615 WASHINGTON BLVD., BOX 7079, ST. LOUIS 77, MO.

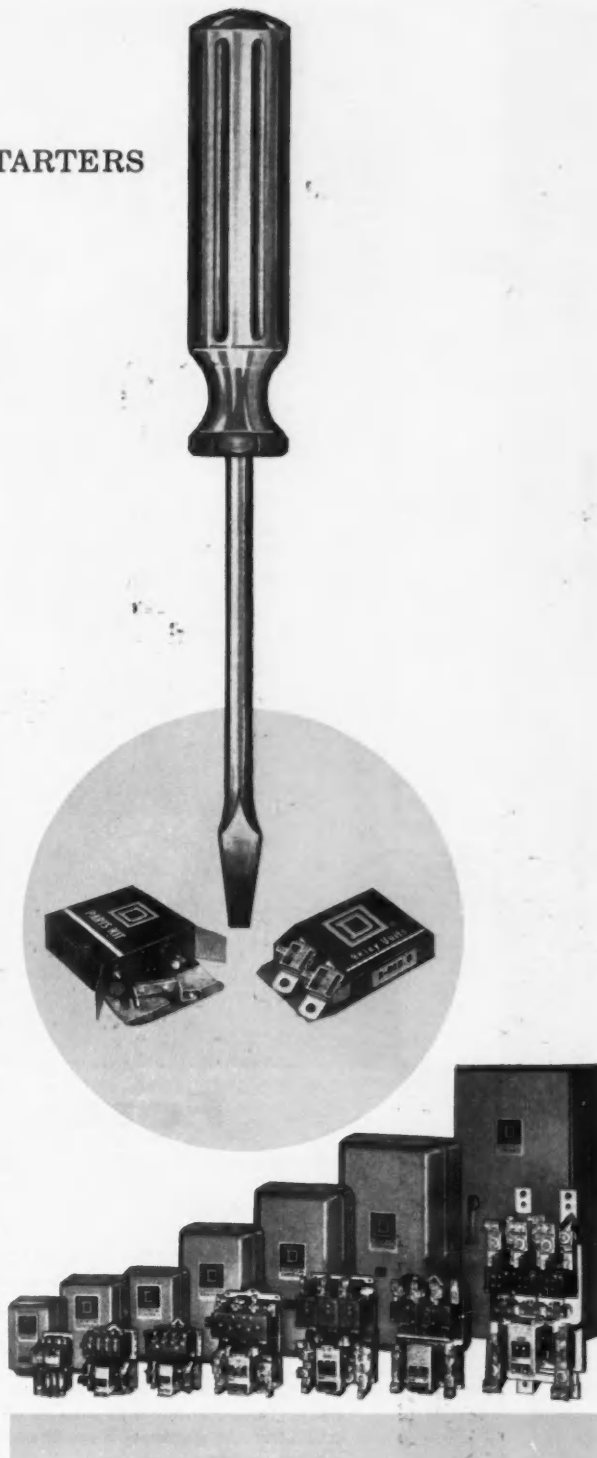
a down-to-earth talk about MOTOR STARTERS

how high do you rate **VERSATILITY?**

• When you're comparing motor starters, it makes sense to work against a check list of important design and performance features. High on such a list is versatility—and on this point, Square D ranks number one for several reasons...

No other starter is so easy to modify—all you need is a screwdriver, one of Square D's parts kits and a couple of minutes. It's a breeze to add electrical interlocks (up to four double-circuit units), all front-connected. You can change thermal elements on overload relays to match motor changes—in seconds. It's easy to add a cover-mounted push button, pilot light or selector switch.

Versatility is one of several areas in which Square D starters have more to offer.



For the complete story, write for Bulletin SM-293 describing Class 8536 Starters
Square D Company, Dept. SA, 4041 North Richards Street, Milwaukee 12, Wisconsin



SQUARE D COMPANY

wherever electricity is distributed and controlled

new **APPLETON**®

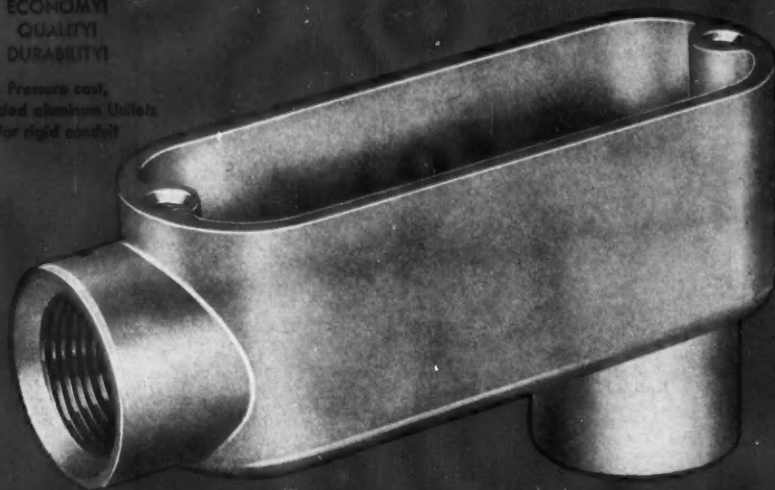
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Aluminum Unilets

as copper free... as aluminum should be*

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Pressure cast,
threaded aluminum Unilets
for rigid conduit



*less than 1% copper content

Form 85 Unilets

The advantages of aluminum combined with Appleton manufacturing standards for dependable performance now make available a wide selection of rugged, serviceable pressure cast aluminum fittings to give you easier electrical installations... faster, more economical!

Your distributor has them now. The complete line includes seven of the most popular types in $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1" sizes to meet most job requirements. When you use them, you will agree... they are outstanding in every respect—from design to manufacturing excellence.

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Outlet Boxes,
Covers,
Switch Boxes



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ELECTRICAL CONSTRUCTION AND MAINTENANCE

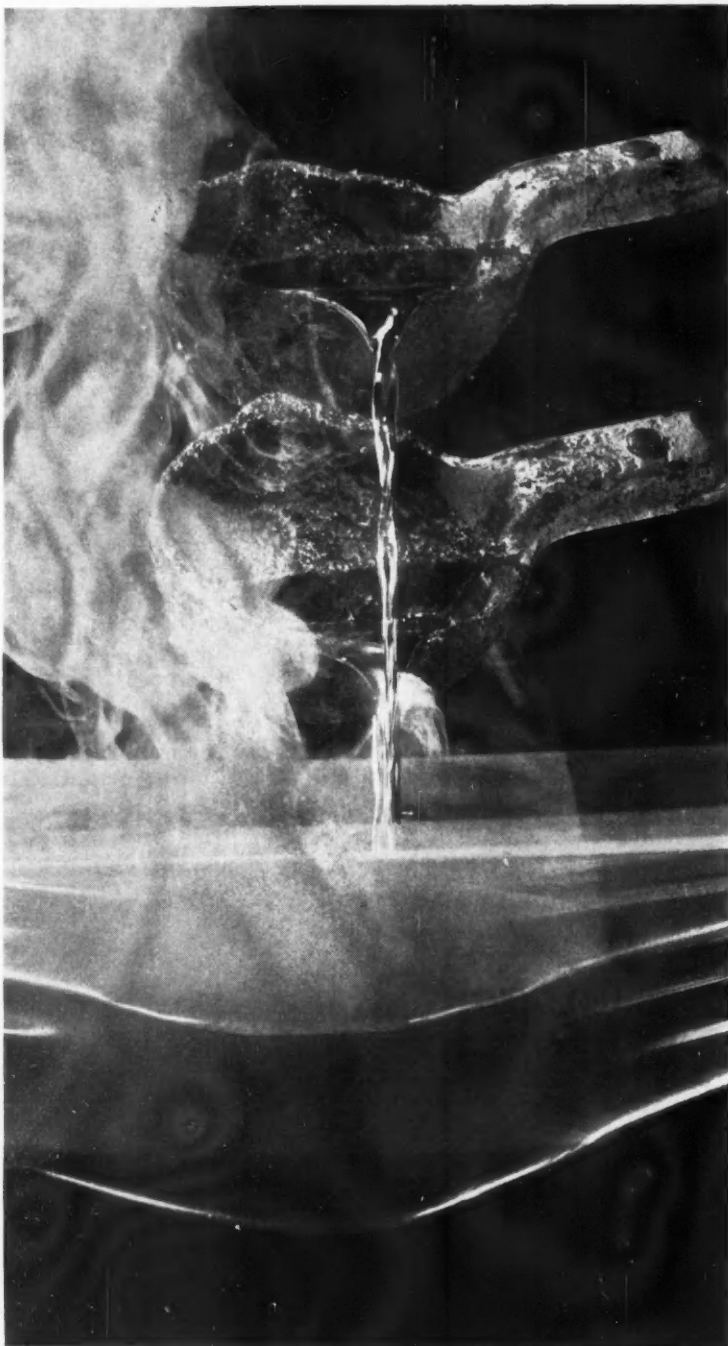
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Electrologist and Electrical Record . . . Established 1901

Published for electrical contractors, electrical departments
in industry, engineers, consultants, inspectors and motor
shops. Covering engineering, installation, repair, mainte-
nance and management in the field of electrical construc-
tion and maintenance.

61ST YEAR • SEPTEMBER 1962

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To show you how flexible Silastic®, the Dow Corning silicone rubber, remains when it is subjected to temperatures as high as 500 F . . . even higher for short intervals. Silastic insulation for wire and cable won't crack, melt, lose flexibility or dielectric integrity after exposure to heat . . . continues to work for you.

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ELECTRICAL CONSTRUCTION AND MAINTENANCE

SEPTEMBER

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Vol. 61, No. 9

ELECTRICAL CONSTRUCTION and MAINTENANCE

SEPTEMBER 1962

Published monthly with an additional issue in September by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), Founder, Executive, Editorial, Circulation and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N.Y. Printed in Albany, N.Y. Officers of the Publications Division: Nelson L. Bond, President; Shelton Fisher, Wallace F. Trandly, Senior Vice Presidents; John R. Callahan, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator; Daniel F. Crowley, Vice President and Controller. Officers of the Corporation: Donald C. McGraw, President; Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Executive Vice President and Treasurer; John J. Cooke, Vice President and Secretary.

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Certified **66**
NEOPRENE

FIRST 600 VOLT W & G PORTABLE CABLES WITH

XL
85°C

BUTYL

STANDARD INSULATION AT NO ADDITIONAL COST



Now, inside as well as out, Bronco 66 Certified types W and G cables are given all the protection modern science and technology can provide for a portable 600 volt cable. To the 67.32% neoprene outer protecting jacket—still the highest content in the industry—is added the inner protection of Bronco XL Butyl insulation. XL Butyl is markedly superior to ordinary rubber insulation in its resistance to aging, moisture, ozone, corona cutting, and especially to heat. It has much better electrical properties. We believe Bronco XL Butyl is in all respects the finest insulating material available for use in portable cables.

Butyl-insulated Bronco 66 is not a "special"; not an alternate vaguely "available." You don't have to ask for Butyl, just ask for Bronco 66. Virtually all of the vast stock now in the Bronco nationwide network of Servicenters is insulated with Butyl. What's more, the addition of XL Butyl to Bronco 66 does not increase its cost to you by one cent.

RATED FOR 85°C COPPER CONDUCTOR TEMPERATURE Probably the biggest advantage to the user of XL Butyl is the 85°C ampacity rating of Bronco 66 W and G cables. This means that, compared to a 75°C-rated rubber-insulated cable, a greater current load can now be carried by a conductor of given size. Conversely, with a conventional load, a tremendous safety margin is built in to protect the cable from temporary overloads.

PURCHASER CAN SAVE UP TO 20% When you inspect the 85°C ampacity tables, you will see that an awg size 2, three-conductor XL Butyl-insulated Bronco 66 cable will carry the same load as a size 1 with HR insulation. The savings are about twenty percent. In smaller sizes also, a cable one or two awg sizes smaller occasionally may be used.

XL Butyl insulation gives you one more compelling reason for always insisting on the best—Bronco 66 Certified.

WESTERN INSULATED WIRE COMPANY
Los Angeles 58, California

Please rush sample, new ampacity table, and complete information on your new XL Butyl-insulated Bronco 66 Certified 600-volt electrical power cables.

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POSITION _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

Sidelights

LUMADRAMA

Independence Hall in Philadelphia has been equipped for a spectacular sound and light drama in which sophisticated floodlighting techniques are coordinated with a program of music and voices devoted to the history of the structure. It is the first of many national shrines which will be similarly equipped. The exacting electrical installation was made by E-J Electric Installation Co. of New York. Associate Editor John H. Watt describes the work in "Independence Hall Echoes the Past" beginning on page 112.

STATISTICAL SUMMARY

Our annual statistical summary depicts generally favorable trends in the economy and in the electrical industry. Associate Editor Berlon C. Cooper's analysis may be summed up as cautiously optimistic for the immediate future with no significant change in the healthy growth pattern of the electrical industry in prospect. His report "Sound Growth in Electrical Markets" begins on page 91.

CONTROL INSTALLATIONS

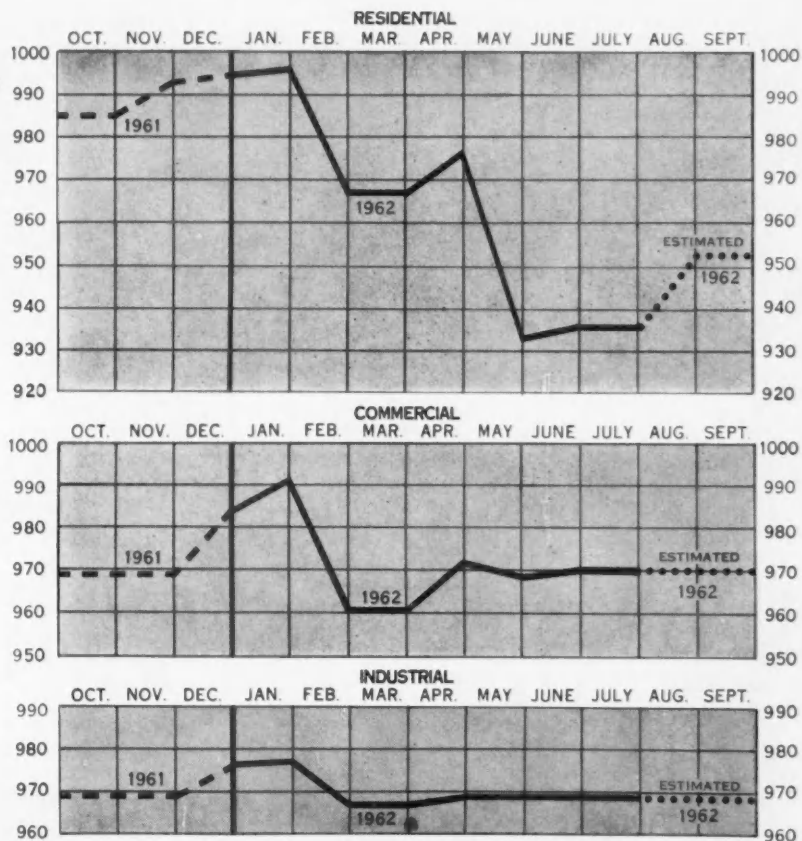
The relative merits of different types of control installations are often argued but rarely subjected to objective analysis. William H. Younger of Allen Bradley initiated and directed a critical study of a practical control layout comparing separate switches and controls, combination controllers and control centers. His report discloses comparative installed costs for the project, and enumerates ten of the most common influencing criteria in the selection of components. "Selecting Motor Control Systems" begins on page 107.

ELECTRICAL MATERIALS COST INDEX

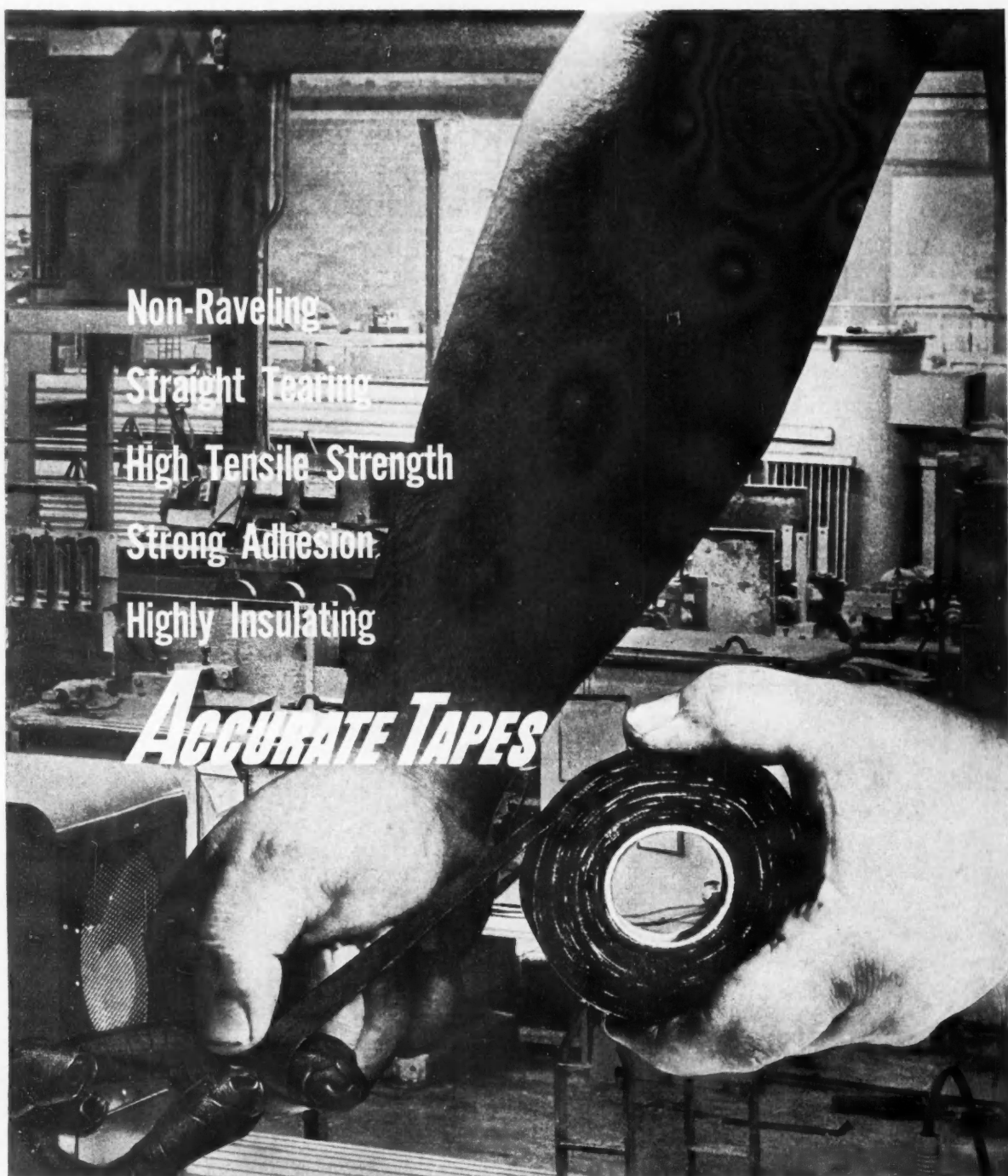
CHANGES IN THE COST OF ELECTRICAL MATERIALS FOR EACH OF THREE TYPICAL JOBS ARE SHOWN ON THESE THREE CHARTS.

THE BASE (1000) REPRESENTS THE AVERAGE COST OF THE MATERIALS FOR THE YEAR 1960

THE MONTHLY INDEX POINTS SHOW THE VARIATIONS IN COST ON THE FIRST OF EACH MONTH.



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Non-Raveling

Straight Tearing

High Tensile Strength

Strong Adhesion

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still your best buy in tape!

ACCURATE

Industry buys because ACCURATE is
the best buy in Friction — Rubber —
Plastic Insulating tapes.

MANUFACTURING COMPANY

GARFIELD, NEW JERSEY

Washington Report

SEPTEMBER • 1962

Last month President Kennedy decided against a quick tax cut as a means of spurring economic growth, which many of his advisers and others has recommended. His decision was made following the availability and review of July statistics on major economic barometers. The July figures did not justify a "crisis atmosphere," according to the President, but instead showed:

- Another new record in industrial production (an FRB Index of 119% of 1957 equal to 100%).
- A new reduction in unemployment (to four million, or 5.3% of the total labor force).
- A significant rebound in retail sales (\$19.5 billion seasonally adjusted), up from \$19.1 billion in June.

In addition, the President gave some reasons for his "confidence in the economy, such as:

- The stock market "rests on a sounder basis" after its nosedive in May and June.
- Inflation "remains no longer a serious threat."
- Progress is being made in halting the outflow of gold and dollars.

Whether it is cause-and-effect, or pure coincidence, the economy has lacked vigor since the stock market break at the end of May. Economists, businessmen, politicians or others can each make out a case for his position on the economy—1) recession, 2) high-level stagnation, 3) continuing slow improvement.

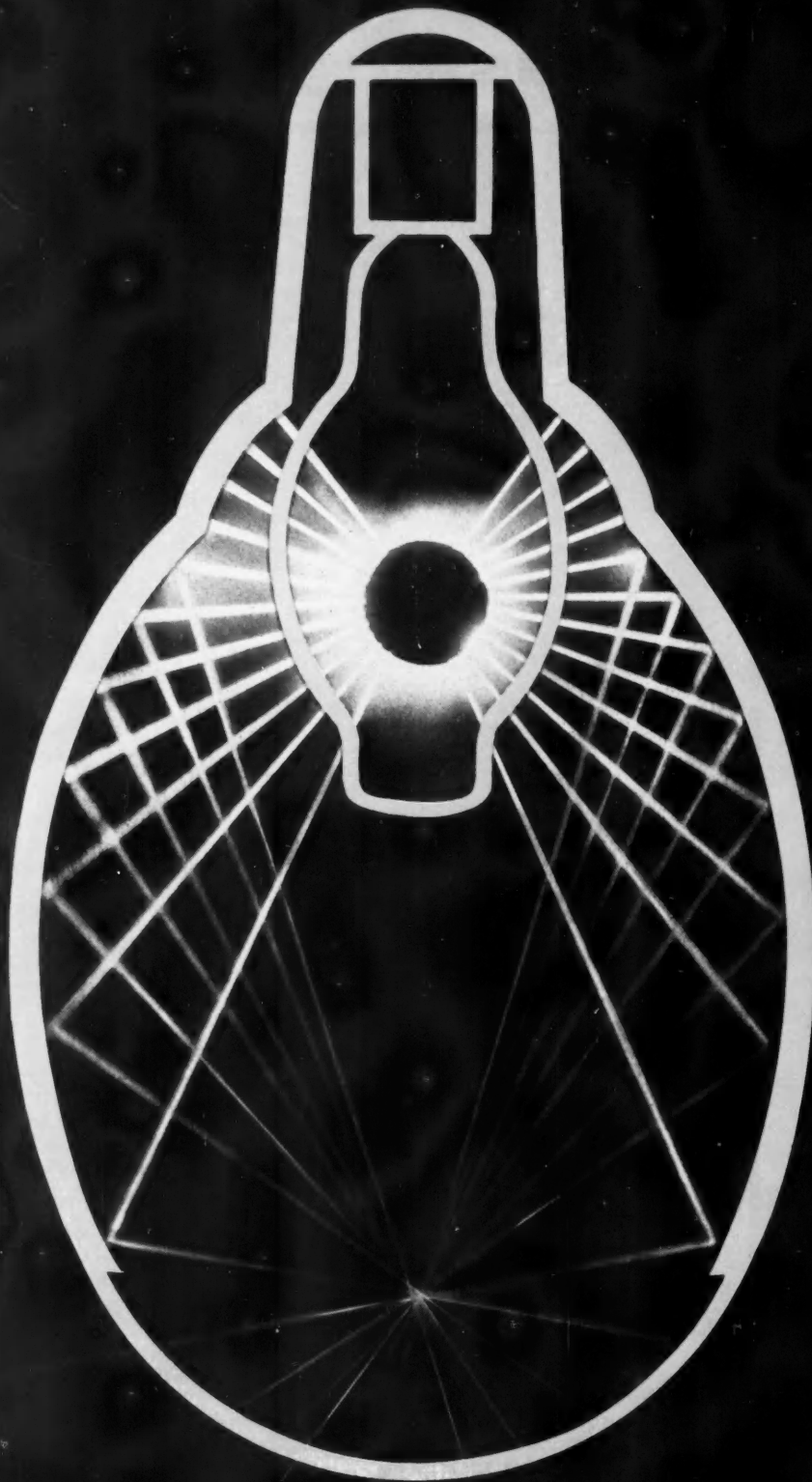
Construction spending in July was down from the June rate, but still was at the second highest annual rate on record—\$61,655 million in July, versus the record \$62,474 million in June. July spending was 8% greater than for the same month a year earlier. The Commerce Department's official prediction for 1962 is \$60 billion. The actual new construction spending in July was \$5.7 billion, off about 1% from the June actual figure. Total new private construction outlays in July were \$4,061 million, off 1% from June spending, while public construction spending totaled \$1,645 million, off 3% from June.

Commerce Department released \$2 billion in August to spur highway construction, but only about a dozen states have completed planning and are eligible for these additional funds. The move was obviously one to help spur the economy, making \$5.8 billion of Federal aid available in the Government's fiscal 1963 rather than the previously planned \$3.8 billion.

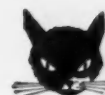
The nation's airports have been allocated \$74 million in Federal aid, for the current fiscal year beginning July 1, it was recently announced by Federal Aviation Agency. The aid funds will go to 419 of the nation's airports. Generally speaking, local communities match the Federal grants on a 50-50 basis.

Home construction activity declined slightly in July, to a seasonally adjusted annual rate of 1,407 thousand new private housing units, off 0.5% from the June rate. The annual rate of all private housing starts in the first seven months of this year averaged just under 1.4 million units, which is 25,000 units below the Dept. of Commerce's forecast for the year.

The U. S. gold reserve declined \$742 million during the first seven months of 1962, leaving \$16,148 million on hand. The total outflow of gold in all of 1961 was \$877 million.



**PHOTO-DIAGRAM OF HORIZONTAL CROSS SECTION
SHOWS WIDE LATERAL LIGHT DISTRIBUTION**



Revolutionary new "Cat's-Eye" Floodlight* gives widest usable beam

Narrowest floodlight delivers widest horizontal beam plus controlled vertical distribution

The widest usable floodlight beam available today is produced by the narrowest reflector. This seeming paradox of design in Revere's revolutionary new 400-watt mercury luminaire, the CAT'S-EYE, is explained by the photo-diagram at the left and its adjacent caption. The unit achieves an extremely wide lateral beam spread. A similar demonstration through a vertical cross section would reveal carefully controlled vertical light distribution.

Beam spreads and efficiencies are given in the table below. Notice that efficiency figures are *beam efficiencies* and that changes in the vertical distribution may be achieved without appreciably affecting the wide lateral distribution.

400-Watt Mercury Lamp	Horizontal Beam Spread	Vertical Beam Spread	Beam Efficiency
Clear	158°	39°	57%
Phosphor-Coated	164°	80°	61%

Prior to the invention of the CAT'S-EYE, a light pattern of wide lateral and controlled vertical distribution could be obtained only with a point source in combination with a Fresnel lens. This new Revere floodlight achieves such distribution with high utilization by means of a unique combination of elliptical and parabolic reflector contours.

The controlled beam of the CAT'S-EYE puts more light where you

want it and makes possible efficient, economical lighting of parking lots, sports areas, loading ramps, and building fronts. Now you can light wide areas with fewer floodlights and attain higher intensities than with conventional units.

We expect that there may be questions about the ability of so narrow a floodlight to produce such a wide beam. To answer these questions our representatives will welcome the opportunity to supply photometric data and to arrange a demonstration that will let this remarkable luminaire speak for itself.

The handsome CAT'S-EYE is internally wired with no cords or wires exposed to view. It is sturdy and

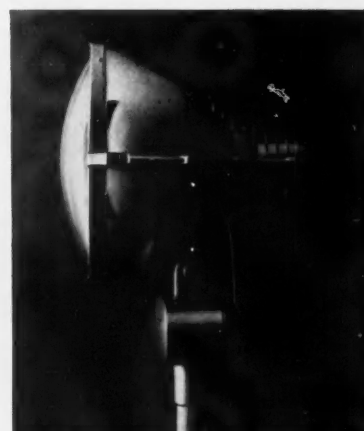
weatherproof and is designed for long, trouble-free service and easy installation. A degree-marked fitter and built-in sights assure accurate aiming. The narrow shape permits compact mounting of the floodlights in multiple installations, and accessories are available for pole-top, cross-arm, pipe, or wall mounting.

A combination fitter-housing encloses a choice of constant-wattage or reactor-type ballasts for common primary voltages. A fitter without the housing and integral transformer is used with remote ballasts.

For more information on how you can widen your outdoor lighting horizons with the CAT'S-EYE, send for your copy of Bulletin No. 100-49.



FRONT VIEW of Revere CAT'S-EYE illustrates slender, upright contour. Unique shape results from use of reflector with elliptical horizontal cross section that produces the widest usable beam of any floodlight.



SIDE VIEW shows parabolic contour of luminaire's vertical cross section which produces controlled vertical beam spread. Combination fitter-housing below the reflector encloses transformer for mercury lamp.

PHOTO-DIAGRAM shows wide lateral distribution of light. Line drawing of Revere CAT'S-EYE is superimposed on photograph of reflector's horizontal cross section. (Note: Special light source is here surrounded by slotted shield to produce ray trace that represents light flux in this laboratory demonstration.) Light control is achieved solely by the compound elliptical reflector. Special heat-resistant convex lens is contoured to prevent internal reflections and to provide maximum light transmission. The lens provides weathertight cover.

*Patent applied for.

RVR-2-215

Revere®

OUTDOOR LIGHTING

REVERE ELECTRIC MFG. CO.

7420 Lehigh, Chicago 48 (Niles), Illinois

TELEPHONES: Area Code 312, Niles 7-6060;

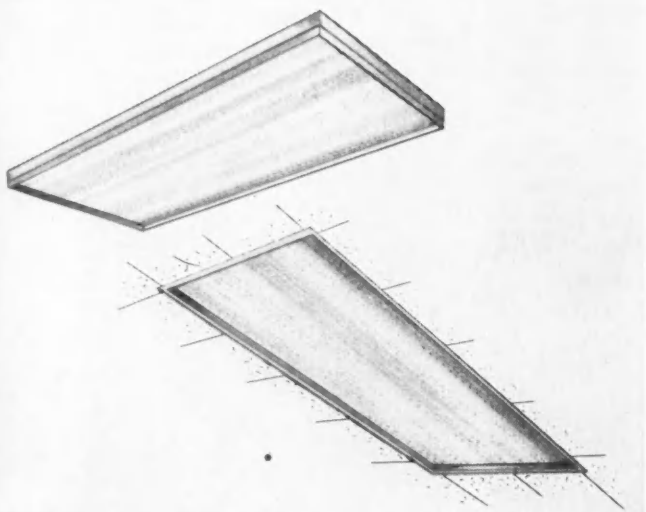
Chicago, SPring 4-1200. TELEGRAMS: WUX Niles

GOOD LIGHTING PAYS EVERYONE ...BE SURE TO GET YOUR SHARE!

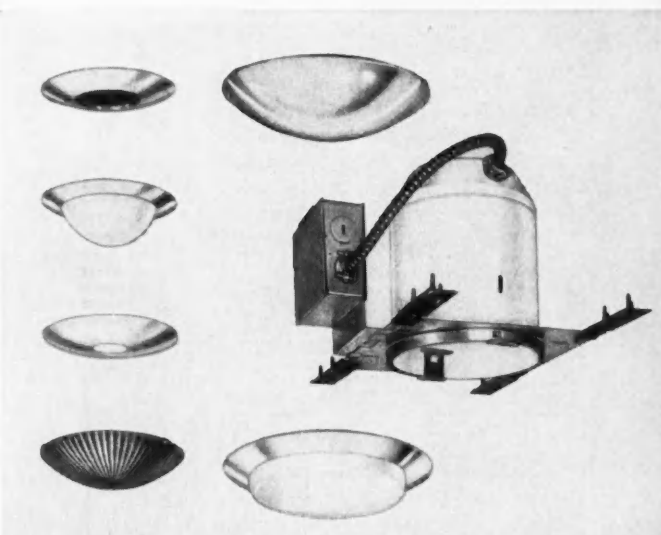
Graybar's Lighting Action Plan helps you get it! Graybar gives you the tools for selling...quality lighting equipment, priced to fit every budget...available from your local Graybar stocks. Also, you're able to offer financial help through Leased Lighting—at no risk or cost. And...you have all of Graybar's know-how for help in planning, layout and specification. It's all in the Graybar Sales Kit which

includes such helpful items as a complete Lighting Prospect Plan Book, a Light Meter, Lighting Selector and other sales aids. But time is money—your money, so act now on the Action Plan. Ask your local Graybar man, or write Action Plan, Graybar Electric Company, Inc., 420 Lexington Avenue, N. Y. 17, N. Y., and...call Graybar for everything electrical. **Graybar**

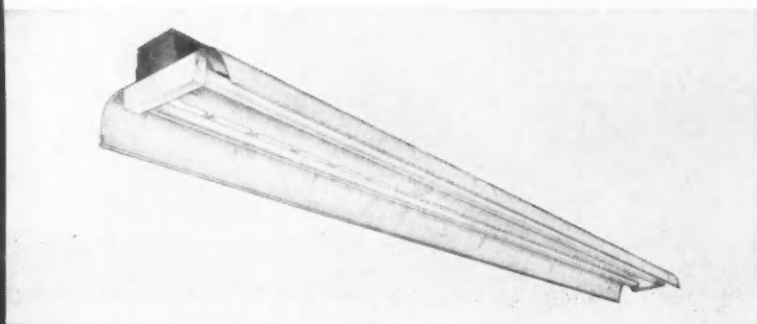
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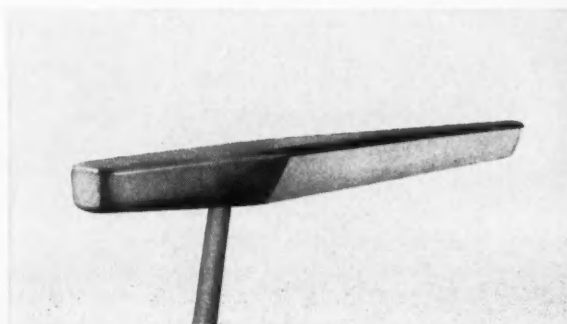
BENJAMIN: Outstanding style and economy in Benjamin's Modular Troffer for recessed or surface mounting; Prismatic Lens or 1/2" Cube Plastic Louver. Fixture is one-piece steel housing; baked enamel finish. Suggested user price \$29.60 with two 40 W Rapid Start Lamps, \$47.65 with four lamps. Troffers at slight additional cost in flange construction with integral swing-out hangers.



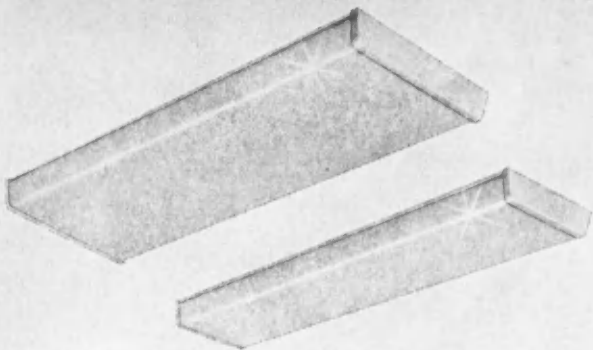
MOE LIGHT: Prewired Adjust-All round recessed housing with choice of 40 decorator combinations of Open Trim, Trim-and-Glass and Decorative Glass including satin brass or aluminum, chromium, baked enamel, polished brass, Fresnel lenses, opal glass, white glass, etched glass.



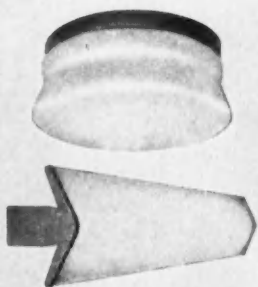
KEYSTONE RLM FEATURE-LITE INDUSTRIAL: Here's top efficiency lighting with 12% upward component, lifetime porcelain enameled reflectors and high power factor fused ballasts. In 4-foot, 2-lamp Rapid Start suggested user price \$21.65; 8-foot, 2-lamp Slimline suggested user price \$36.65.



GE POST MOUNTED FLUORESCENT: Sturdy aluminum housing with acrylic plastic light diffusing globe and aluminum reflector. Internally prewired for quick, easy installation; optional photo-electric control available. Suggested user price \$130.00; with control, \$138.00.



WAKEFIELD PRISMATIC: Popular, practical, inexpensive Wakefield Prismatic luminair has $\frac{1}{4}$ " thick clear lens diffuser of styrene, easily removed without tools. Prismatic 50 has two Rapid Start lamps for 50 footcandles—suggested user price of \$20.75; Prismatic 100 uses four lamps for 100 footcandles at \$34.75.



LITECRAFT VALULITE: Fixtures that feature beauty in opal glass and anodized aluminum; hinged ceiling drums for easy relamping. With two 75 W lamps, suggested user price \$6.40, three 100 W lamps, \$10.00. ■ Litecraft also features fluorescent fixture with reversible plastic diffuser for horizontal or vertical mounting on wall or ceiling. Suggested user price with 40 W Rapid Start, \$13.35.



ANTHONY "THRIFTY-Q": Cool, controlled Quartz-Iodine lighting. Cast aluminum fixture for rapid heat dissipation; high-temperature Neoprene gaskets. In two models; 500W/120V, suggested user price \$30.65 and 1500W/277V at \$38.65.

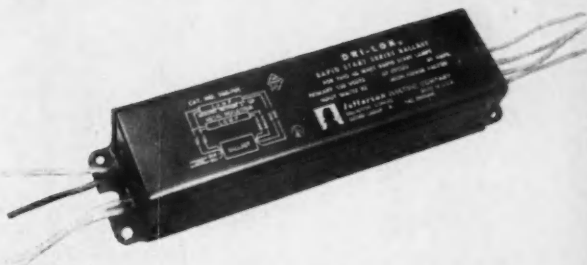
MOLDCAST HOUR GLASS: Modern design in cast aluminum fixtures for sealed beam lamps. The Hour Glass is the only cast aluminum, weatherproof fixture of its kind, complete with protective lens and canopy plate. Satin aluminum finish protected by clear plastic coating. Suggested user price \$25.17.



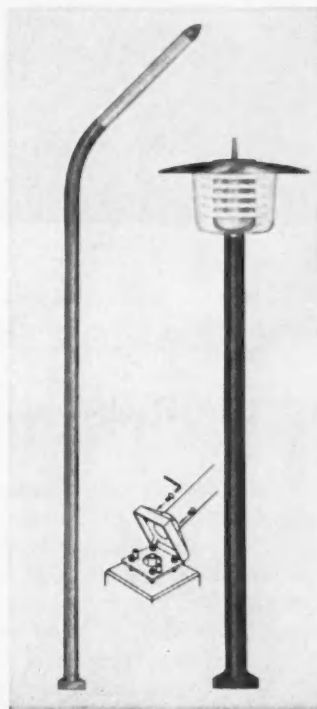
WIDELITE: For 100, 175, 250, 400 and 1000 W color-corrected mercury vapor lamps, quartz-iodine lamps or incandescent lamps, or in combination. Die-cast aluminum bodies resist corrosion and damage; heat dissipating fins promote longer operating life. May be mounted on walls, poles or hung; in single or multiple units. Choice of reflectors for different beam coverage. Available in all voltages at suggested user prices from \$42.00.



AMPLEX: Advanced lighting uniquely combining fluorescent and incandescent. Instantly adjustable lamp, high quality light for office, plant or laboratory...in clamp-on, screw-down or draftsman-clamp mounts. Suggested user prices from \$27.40.




JEFFERSON DRI-LOK: Ends danger of compound leakage. Dri-Lok is a new thermo-setting plastic, bonding ballast core, coil and case into one unit. Will not react or combine chemically with any material in ballast. Ballast operates cooler for longer operating life.



SERNER LIGHTING: Lowest installed cost per lumen output of any outdoor fluorescent. Davit lights are complete down to mounting bolts, internally wired with HPF ballast in base for easy servicing through patented "Hinge-O-Matic", allowing one-man relamping and low-cost initial installation. Pole and lamp are fastened to base with heavy-duty hinge for quick manipulation. In natural aluminum or anodized finish. Suggested user prices range from \$377.00 to \$472.00, including poles and all equipment. Also available in double-davit construction. ■ Circa-Lite also features exclusive "Hinge-O-Matic" for ease of installation and maintenance. Suggested user prices from \$268.00 to \$535.00, including poles.

**Here is part of the wide selection of fixtures we carry...
in stock at Graybar...headquarters for lighting and lamps**



Sheath—premium grade P.V.C.

Cable Tape—Mylar®

Fillers—non-wicking plastic

Insulation—high density polyethylene

Coding—Type A: white printed code

on black—IPCEA Method #3

Type B: spiral stripes

on color background—IPCEA Method #1

Covering—heat stabilized Nylon®

Conductor—stranded tinned copper

*reg. DuPont trademark

New Rockbestos 90°C Plastic Control Cable Offers maximum circuit reliability

Rockbestos PNR X-90, 600 volt, plastic control cable was designed specifically to provide maximum circuit integrity under extreme environmental conditions...resulting in lower cost per service hour.

Suitable for aerial, conduit or direct burial service at temperatures from -67°F to +195°F, PNR X-90 features a number of other important advantages due to its unique construction. It has excellent resistance to

heat distortion, cold flow, environmental stress cracking, temporary overload conditions and exposure to most chemicals and oils.

We invite you to compare the construction features and physical and electrical properties of PNR X-90 with IPCEA requirements listed on the opposite page or with any competitive plastic cable. See for yourself how extra quality and extra reliability, are designed into Rockbestos PNR X-90 plastic control cable.

Physical Properties of PNR X-90

Exceed IPCEA Specifications

ROCKBESTOS PNR X-90	I.P.C.E.A. S-61-402	ADVANTAGES PNR X-90
Coated conductors	Uncoated	Quicker soldered connections. Cleaner, more positive pressure connections.
High Density PE insulation	Regular PE	Tougher, crack-resistant, better heat and cold resistance.
Nylon insulation covering	Optional	Better abrasion—, heat—, and chemical-resistance.
Non-hygroscopic, non-fibrous fillers	Material not specified	No moisture wicking.
Mylar cable tape	Not required	Rounder cable—easier to handle, cleaner. Tape improves flexibility, augments jacket toughness, and serves as chemical barrier.
Premium PVC jacket, 90% concentricity	General purpose PVC—80%	Tougher, better heat distortion resistance, improved cold resistance, flexibility and resistance to wear.

Electrical Test Results also

Prove Superiority of PNR X-90

TESTS	I.P.C.E.A. S-61-402	ROCKBESTOS RSS-3-201	TYPICAL VALUES
POLYETHYLENE INSULATION			
Original:—tensile, psi	1400 min.	2800 min.	3,100
—elongation, %	350 min.	250 min.	300
NYLON COVERED CONDUCTOR			
Dielectric strength: (X-90)			
Heat distortion—10#, 115°C 24 hr.	—	12,000v. min.	22,000v.
Cold flow—50#, RT, 24 hr.	—	20,000v. min.	50,000v.
Tank—6 hr. water #12—600v.	3000v. min.	3,000v. min.	OK
Insulation Resistance K—			
6 hr. in water	30,000 min.	50,000 min.	OK
SAE20 oil, 70°C., 4 hr:			
PE tensile, % of original	—	90 min.	93
PE elongation, % of original	—	90 min.	92
Cold blend—55°C., 1 hr.	No cracks	No cracks	OK
SHEATH			
Original: tensile, psi	1500 min.	1900 min.	2,500
elongation, %	100 min.	175 min.	275
SAE20 oil, 70°C., 4 hr:			
tensile, % of original	80 min.	85 min.	96
elongation, % of original	60 min.	85 min.	92
Heat distortion, 121° C			
1 hr.:—%	50 max.	30 max.	14

Here's another fact worth remembering...the serviceability of the basic plastic construction of PNR X-90 cable has been proved in two ways: in the millions of feet of regular, small-diameter PNR cable used in hundreds of installations since it was introduced in 1948, and in its adoption by military specification for severe environmental conditions.

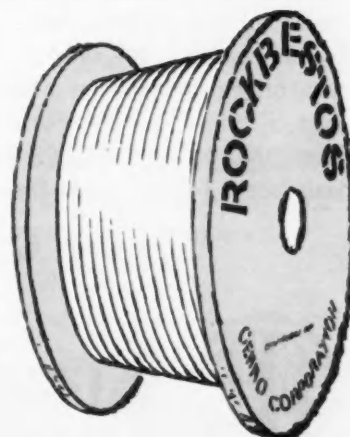
On your next critical control circuit installation specify Rockbestos PNR X-90 for extra reliability.

ROCKBESTOS WIRE & CABLE CO.

DIVISION OF CERRO CORPORATION

MAIN OFFICE AND FACTORY: Nicoll and Canner Streets, New Haven, Conn.

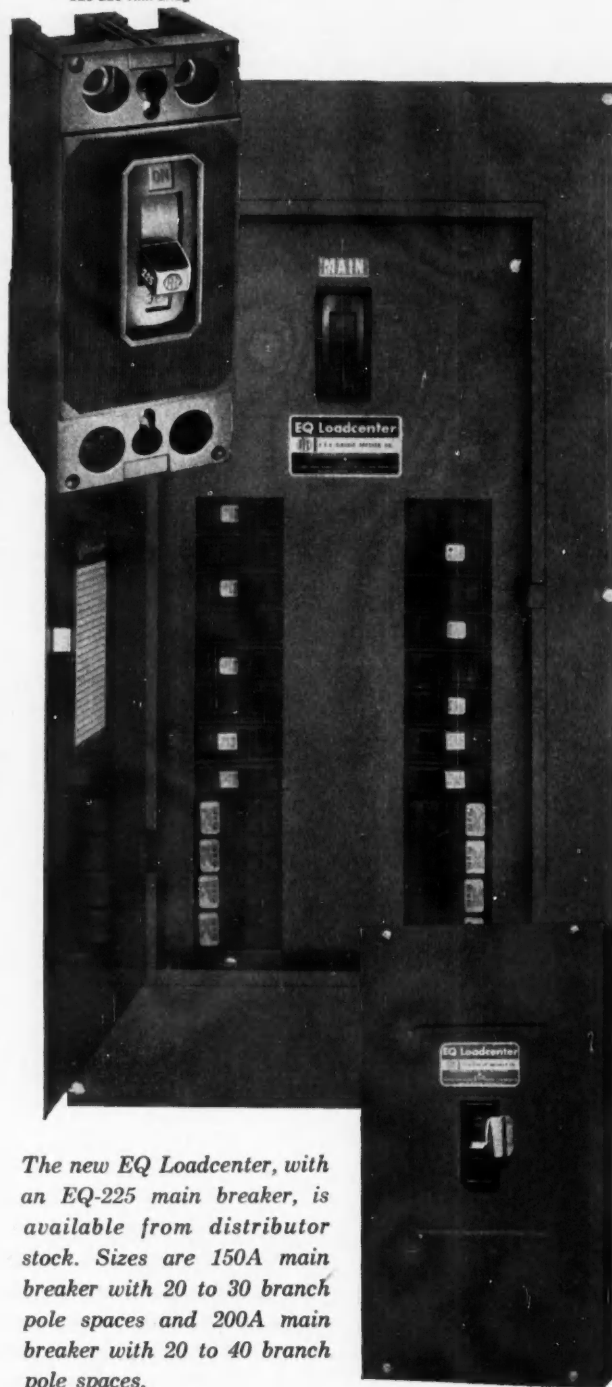
ELECTRICAL CONSTRUCTION AND MAINTENANCE . . . SEPTEMBER, 1962



NEW EQ-225 AMP. BREAKER SAME FAMOUS I-T-E QUALITY

Now available under the I-T-E label are the new EQ-225 circuit breaker, new EQ-Loadcenter with 150A or 200A main breaker, and enclosed EQ-225 breakers . . (NEMA Type 1, 1B and 3) . . in ratings of 125, 150, 200 or 225 amperes. These new modern, compact devices provide positive protection against overload or short circuit conditions. The EQ-225 employs Quick-make, Quick-break, Trip-free mechanism action with common trip (not companion trip). A fault to ground automatically opens both poles of the breaker! Overcurrent protection combines the time proven thermal magnetic principle for positive protection against overload or fault conditions. For additional information, contact your nearest I-T-E District Office, or your local I-T-E Authorized Distributor.

New EQ-225 AMP BREAKER
2 POLE 120/240 VOLTS A-C
125-225 AMPERES



The new EQ Loadcenter, with an EQ-225 main breaker, is available from distributor stock. Sizes are 150A main breaker with 20 to 30 branch pole spaces and 200A main breaker with 20 to 40 branch pole spaces.

for the Contractor who is Proud of his work



I-T-E CIRCUIT BREAKER COMPANY



2' x 2' control lenses of PLEXIGLAS mounted in pairs, County of Sonoma office building, office of Superintendent of Schools, Santa Rosa, California • Architects: Steel & Van Dyke, Santa Rosa

Plexiglas...for lighting that stands out and stands up

"Illumination of the highest quality." This is the phrase that describes installations of lighting equipment which includes control lenses molded of PLEXIGLAS® acrylic plastic.

Lenses of PLEXIGLAS provide freedom from glare at any normal viewing angle, because they are precisely designed optical elements that "bend" light rays. And the crystal clarity of PLEXIGLAS assures full utilization of light, with complete visual comfort.

In addition, PLEXIGLAS lenses remain free of discoloration even after years of exposure to fluorescent light. They are strong and rigid yet light in weight, resulting in safety overhead and ease of maintenance.

We will be pleased to send you the names of equipment manufacturers who use PLEXIGLAS lenses, and a copy of our bulletin "PLEXIGLAS for Lighting," which contains full details on the use of this quality lighting material.



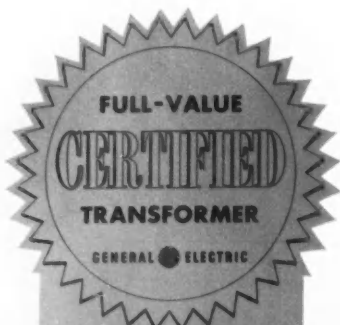
Chemicals for Industry

**ROHM & HAAS
COMPANY**

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

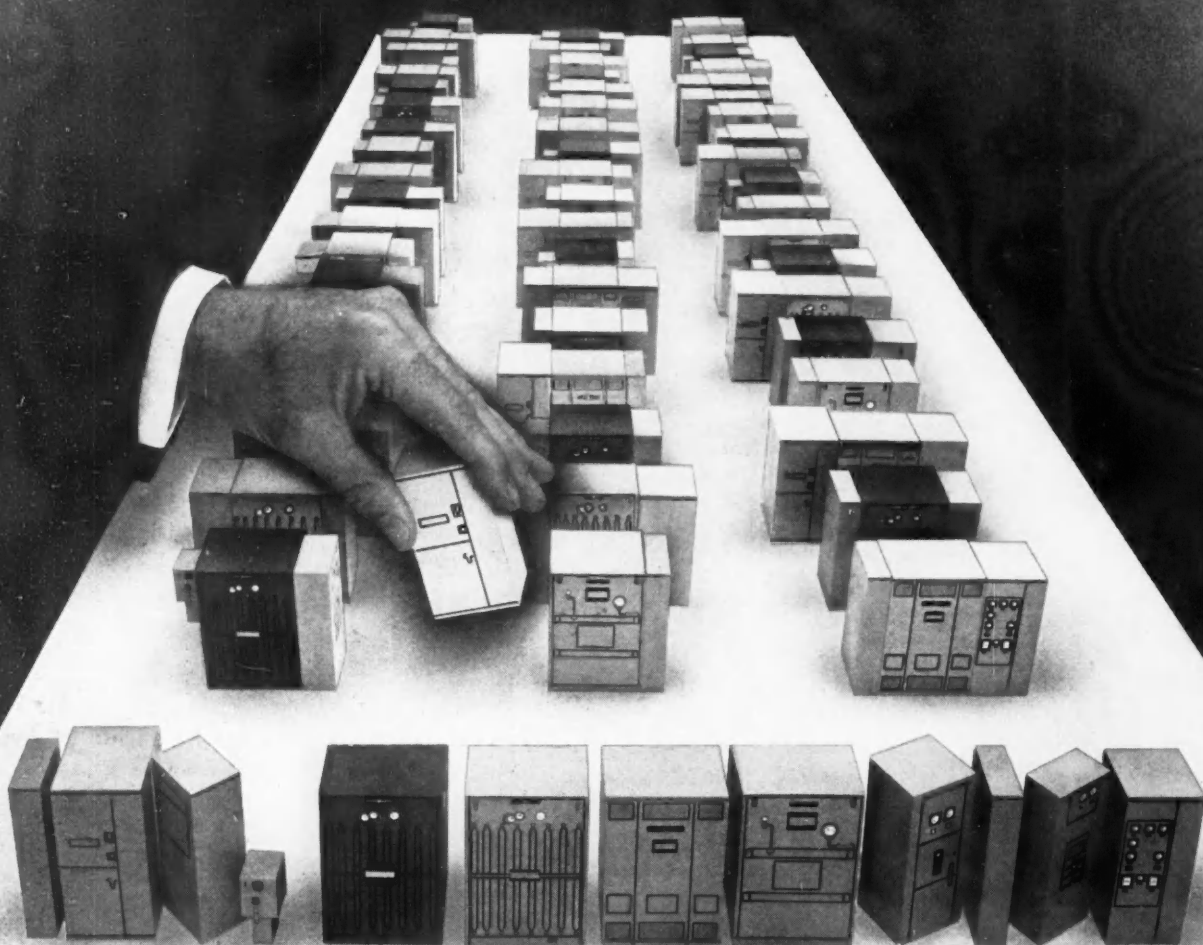
In Canada: Rohm & Haas Co. of Canada, Ltd., West Hill, Ontario

PLEXIGLAS



- Superior design, features, and performance
- Faster shipment
- Complete service

12 building blocks



INCOMING SECTIONS

TRANSFORMING SECTIONS

OUTGOING SECTIONS



to economy, shorter shipment

**Now General Electric can tailor
Integral Distribution Centers
for every load through 2500 kva**

Whatever your load requirements, General Electric can give you fast shipment on dependable, economical Integral Distribution Centers that are just right for the job. Twelve basic incoming, transforming, and outgoing sections—plus optional features—provide industry's most complete range of power packages.

Standardization makes it possible to refine these basic building blocks to high value levels. For example, a recent redesign of our liquid-filled transformer has cut space needs by as much as 21 percent. And new developments in insulation significantly increase transformer life. Manufacturing economies keep prices low. Shipments average six weeks.

Rated from 112½ to 2500 kva, General Electric's Integral Distribution Centers are made up of these building blocks:

- **Four high-voltage terminations:** air switches with or without stored-energy mechanism (two types), oil cutouts, liquid-filled switches, or full-length cable termination compartments.
- **Four transforming sections:** oil-filled, Pyranol* filled (both 112½ to 2500 kva), open dry-type, gas-filled sealed dry-type (both 300 to 2500 kva).
- **Four low-voltage terminations:** AK circuit breaker; full-length terminal compartment; molded-case circuit-breaker, or fusible-disconnect-switch panelboards (both available with motor starters).
- **Metering, relaying** are available options.

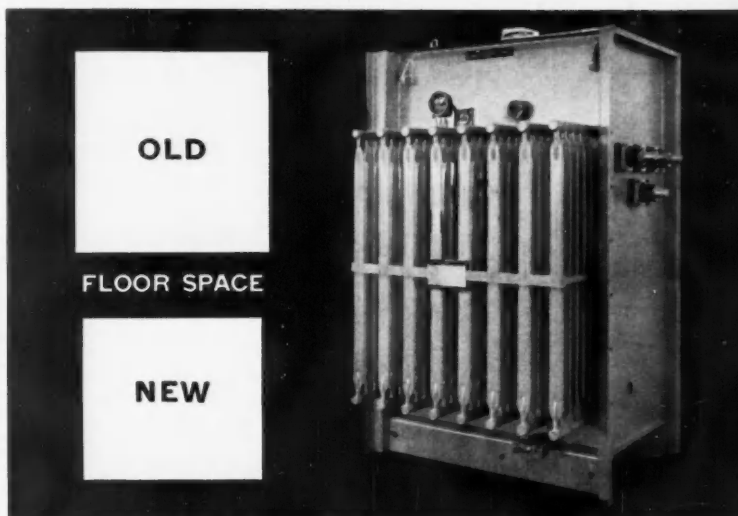
Each Integral Distribution Center is shipped to you in a single, pre-wired package† to lower your installation costs.

Contact your General Electric Sales Engineer, or write for bulletin GEA-7222, General Electric Co., Schenectady, N. Y.

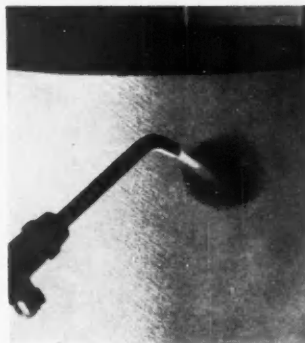
417-12

* Reg. Trade-mark of General Electric Co.

† Air switches shipped separately



UP TO 21% FLOOR-SPACE REDUCTION of liquid-filled transformers typifies continuous improvement of General Electric Integral Distribution Center components.



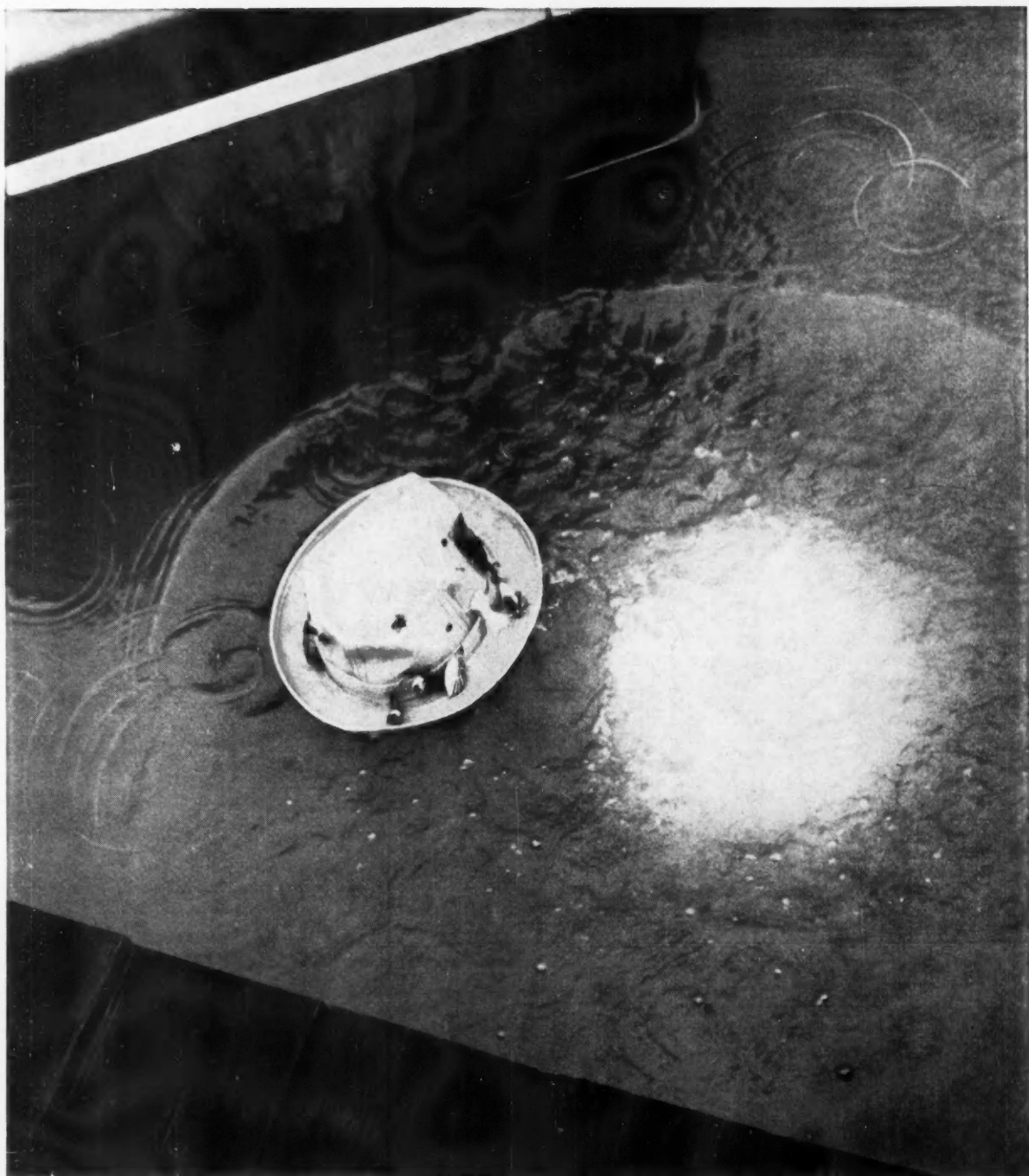
ALPHOLITE* INSULATION provides inorganic dielectric barrier for all dry-type units.



THERMALLY UPGRADED insulation system gives liquid-filled transformers longer life.

Progress Is Our Most Important Product

GENERAL  ELECTRIC



HAVE YOU MISSED THE BOAT...? You have (or will) if you're still using old fashioned metal boxes. Smart contractors everywhere are switching to Union NON-METALLIC new work boxes. You save on the initial cost and more important, you save enough on installation time (as compared to competition) to more than pay for the box. There's no grounding—no box clamps—exclusive plaster seal—handy knock outs. Union boxes are DURABLE—now twice as strong with new Sisal impregnated molding material. Don't forget UNION NON-METALLIC fixtures either. They're non-staining, non-corrosive. They eliminate many grounding problems and have a low unit cost. Complete line — UL approved — Member of NEMA. Contact your distributor now.



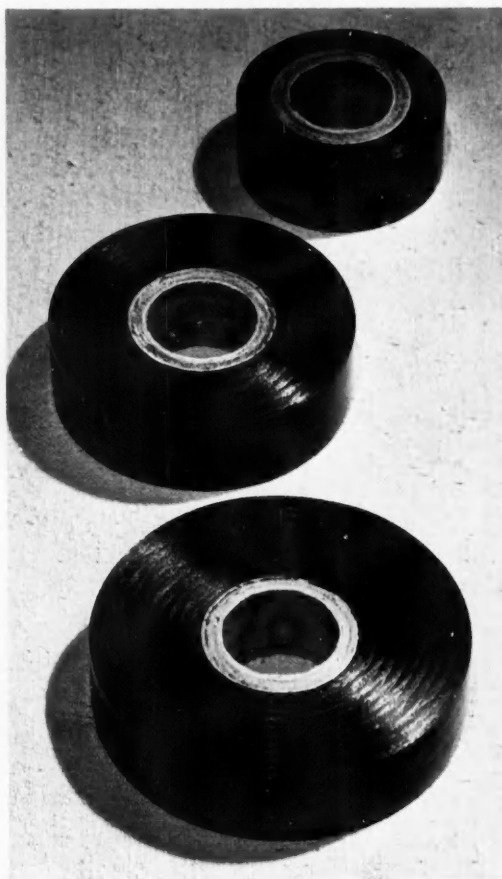
UNION INSULATING COMPANY
PARKERSBURG, WEST VIRGINIA

COM-PAK



THE
STANDARD OF VALUE
IN ELECTRICAL TAPE
NOW SETS A
NEW STANDARD
IN PACKAGING

COM-PAK



new

COM-PAK QUANTITIES

TEN ROLLS TO A CARTON, TEN CARTONS TO A CASE.

Com-Pak quantities of ten make ordering easier, figuring faster. Make keeping track of amounts and accounts simpler. It's easier to earn maximum discounts, too.

Buy the convenient, economical, 100-roll case.

new

COM-PAK ASSORTMENTS

Job-rated rolls, most wanted and most used by electricians. 20-foot, 66-foot and new 44-foot lengths. Pick the roll size to fit the job. You always have enough tape—not too much or too little. Helps prevent wasted time, wasted tape.

Makes economical case buying easier.

NOBODY CAN GIVE YOU TAPE SATISFACTION LIKE Scotch®

"SCOTCH" AND THE PLAID DESIGN ARE REGISTERED TRADEMARKS OF 3M CO., ST. PAUL 18, MINN.

PACKAGES • ASSORTMENTS • PRICES... new tape buying convenience from **3M** COMPANY !



new **COM-PAK SINGLE ROLL PACKS**
Easy to identify, carry and use. Familiar plaid design says immediately, "You're using the best." Tape is always clean and fresh, ready for use. Each roll "protectively packed" within a 100-roll case.



new **COM-PAK DISPENSERS**
Handy Taping Dispenser FREE! New Com-Pak dispenser comes complete, ready to use, at no extra charge on $\frac{3}{4}$ " x 44-foot and $\frac{3}{4}$ " x 66-foot rolls of No. 33. Dispenses, cuts; makes taping easier. Get a case, specify No. 33D.



new **LOW PRICES**
3M now brings you highest quality "Scotch" Brand Vinyl Plastic Electrical Tapes at new low prices. Every roll costs you less. Makes it a better buy than ever before.
Buy the 100-roll case for full value savings.



same **HIGH QUALITY**
No matter how you buy it ... can, box or dispenser, you're assured of uniform, consistent high quality, roll after roll after roll. You get a proper balance of necessary electrical properties in every roll of "Scotch" Brand Vinyl Plastic Electrical Tape. Result! Tape you can depend on. Tape that handles easily in every situation. Tape that saves time, saves money. **Get a whole case of quality.**

...available from your distributor

3M MINNESOTA MINING & MANUFACTURING CO.
2501 HUDSON ROAD, ST. PAUL 19, MINN.

an
editorial
by
Chromalox

why don't electrical contractors get more comfort heating jobs?

Electrical contractors are losing millions of dollars worth of electric comfort heating sales each year. And each dollar lost means less employment, less profit, less growth.

Why are so many comfort heating jobs getting away when the electrical contractor has all the manpower, all the skills, all the facilities to handle them?

Frankly—it's because many contractors have not alerted themselves to the vast potentials of the market. They haven't realized that electric comfort heating is a *fact*; that electric comfort heating is the most modern method of heating; that it can save customers up to 50% over similar installations using other fuels.

Some contractors haven't sold architects and consulting engineers on their basic qualifications and legitimate claims to provide and install electric heat. Then, too, some electrical contractors are afraid to tackle the job because they believe comfort heating is outside their scope of experience.

It's time to wake up!

Installing electric comfort heating

equipment is not complicated. The electrical part of the total job is increased; and because the same supervision covers heating and other electrical work, the contractor's profit goes up.

As to the know-how needed, many electric utilities and manufacturers of electric heating equipment provide a gold mine of information. Typical is Edwin L. Wiegand Company where more than 250 Chromalox field men and over 1000 authorized Chromalox distributors are on hand to advise and help plan electric comfort heating jobs. Chromalox men work with individual utilities and contractors to set up sales, installation and service clinics to take advantage of electric comfort heating opportunities.

To Increase comfort heating sales

Write Chromalox today. Ask for bulletin G-00500. It details the facts, opportunities and profit potentials in the booming electric comfort heating market.

WC-18

CHROMALOX®



**ELECTRIC
HEAT**

EDWIN L. WIEGAND COMPANY
7790 Thomas Blvd. Pittsburgh 8, Pa.



WHAT A BEAUTIFUL WAY TO SHOW HOW GOOD YOUR WIRING JOB IS



Looks so much better, installs so much easier . . .

Cutler-Hammer's NEW Safetybreaker

*... far ahead in
every way*

Here's a bonus in beauty and protection that gives you—and your homeowner customer—many exclusive features at *no extra cost*.

Why install the old-fashioned "basement gray" box when this modern appliance styling is available for the same—often lower—price?

*Simplest, most foolproof
non-interchangeability system by far*

Safetybreaker's simplified non-interchangeability is as far ahead of competition as its styling. There's no fussy keying system. No special tools or "can openers" are required. It's impossible to break off or incorrectly position tabs. See your Cutler-Hammer distributor for a 60-second demonstration. Try it. Prove to yourself how much better, how much easier to install the Safetybreaker is.

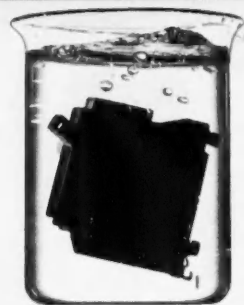
*Here's how the simple "up-down"
N. I. system works:*

1. Tear off plastic spacers to loosen locking bar screws, and let locking bar drop.
2. Plug in breakers in top portion of panel. Slide bar to top of panel.
3. Plug in remaining breakers. Tighten two special screws to lock the N. I. system. That's all there is to it!

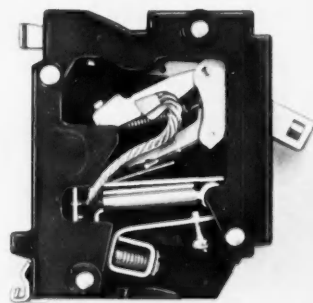


CUTLER-HAMMER

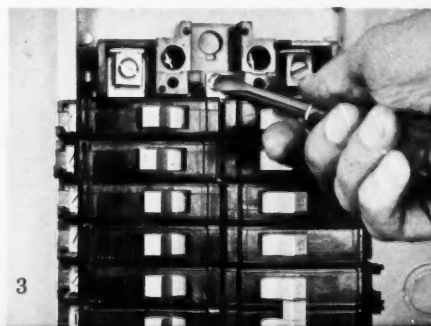
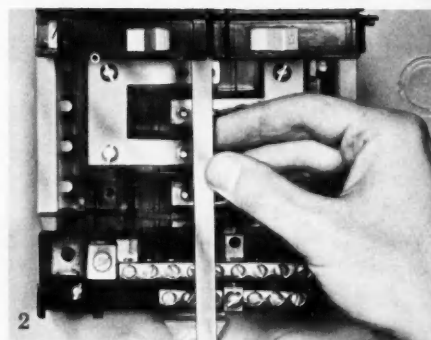
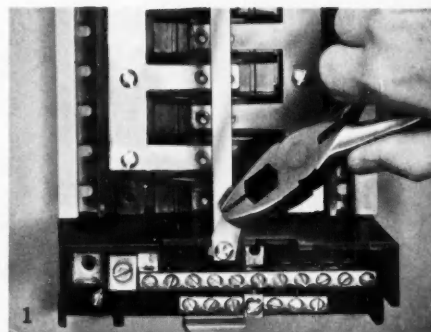
*Cutler-Hammer Trademark

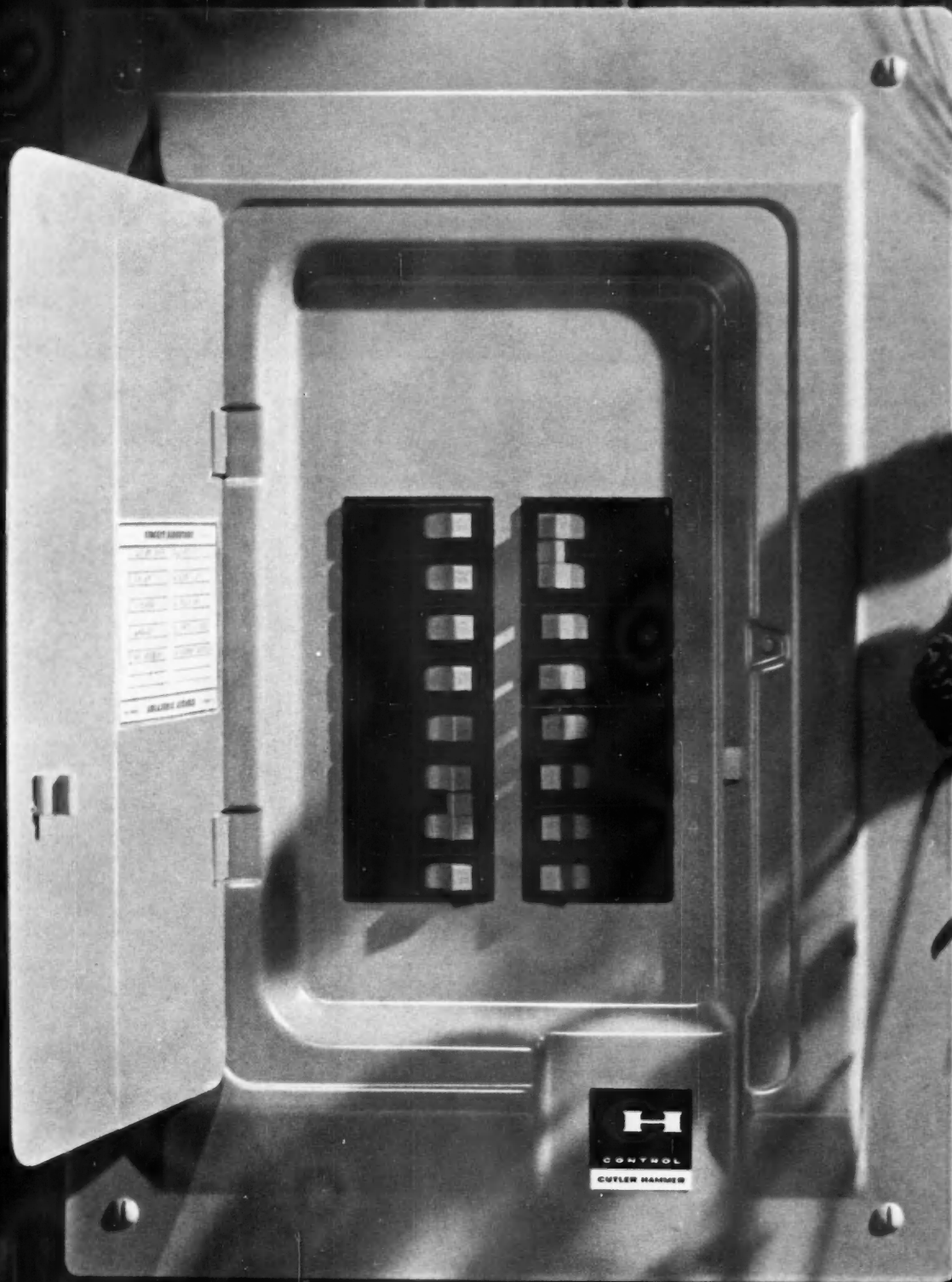


WON'T RUST, WON'T CORRODE. Every operating part is either stainless steel or heavily plated for rust and corrosion resistance.



DOUBLE PROTECTION. Both magnetic trip for short circuits and a bimetal trip for sustained overloads.





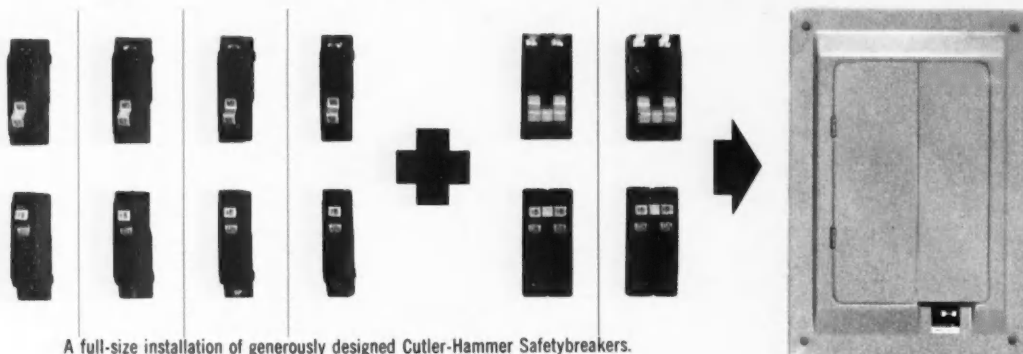
WARRANTY

1. The Company warrants that the product is free from defects in material and workmanship.
2. The Company warrants that the product will perform in accordance with the specifications for the period of time stated below.
3. The Company warrants that the product will be repaired or replaced at no charge to the customer.
4. The Company warrants that the product will be repaired or replaced at no charge to the customer.
5. The Company warrants that the product will be repaired or replaced at no charge to the customer.
6. The Company warrants that the product will be repaired or replaced at no charge to the customer.
7. The Company warrants that the product will be repaired or replaced at no charge to the customer.
8. The Company warrants that the product will be repaired or replaced at no charge to the customer.

WARRANTY

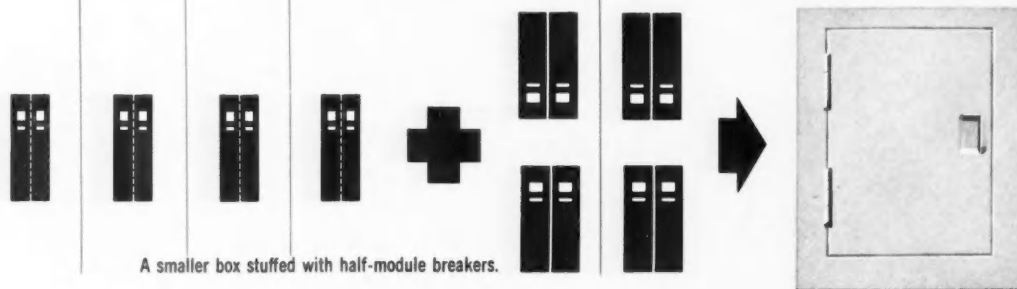
H
CONTROL
CUTLER HAMMER

CUTLER-HAMMER'S FULL SIZE SAFETYBREAKER IS COMPETITIVE WITH "MIDGET" BREAKERS



A full-size installation of generously designed Cutler-Hammer Safetybreakers.

\$70³⁰
LIST



A smaller box stuffed with half-module breakers.

\$70³⁰
LIST

GREATER VALUE FOR THE MONEY

Contractors who use SAFETYBREAKERS know that:

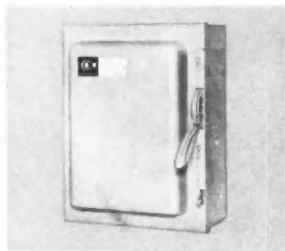
they can provide their customers with FULL SIZE SAFETY-BREAKER protection and value for no more . . . often less, than other contractors pay for half-size installations.

Cost aside, it's a fact that more and more electrical inspectors are insisting upon the use of only FULL SIZE circuit breakers. Their reason . . . FULL SIZE SAFETY-BREAKERS don't offer an opportunity to violate local and national safety codes. Several cities have already outlawed half-size breakers

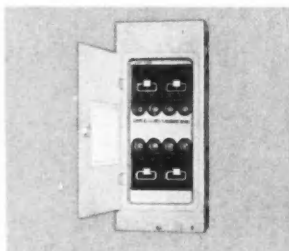
and the number is growing.

Take another look at the actual example illustrated above. Then take a look at the handsome styling, the superior ease of installation, the advanced protection you get with Cutler-Hammer Safetybreakers. The man to see is your Cutler-Hammer distributor.

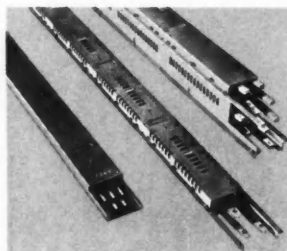
For top performance...these other Cutler-Hammer products



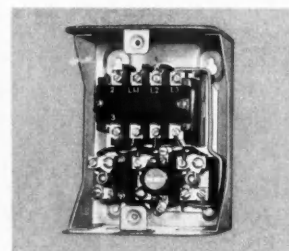
Safety Switches



Fusible Entrance Equipment



A complete line of bus-duct



General purpose motor control

WHAT'S NEW AND BETTER? ASK...

CUTLER-HAMMER

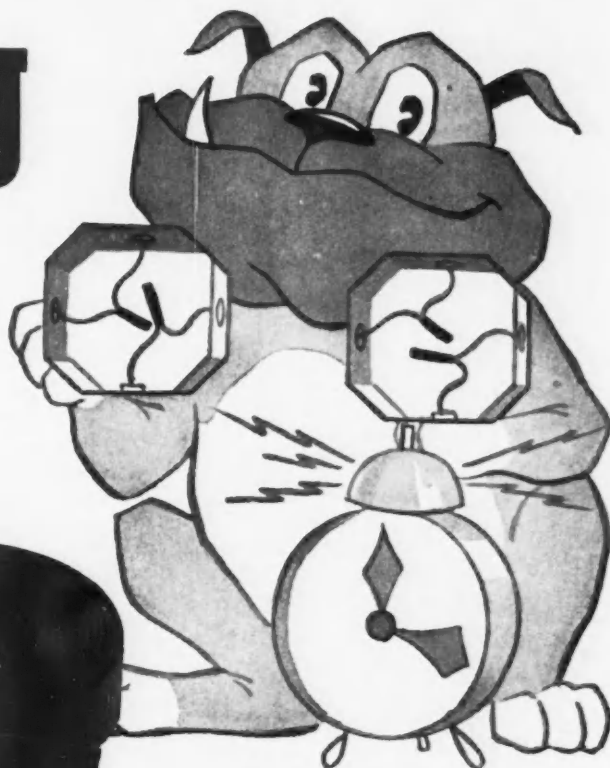
Cutler-Hammer Inc., Milwaukee, Wisconsin • Divisions: AIL; Mullenbach • Subsidiaries: Uni-Bus, Inc.; Cutler-Hammer International, C.A. • Associates: Cutler-Hammer Canada, Ltd.; Cutler-Hammer, Mexicana, S.A.



Twice the work in half the time!

Bull Dog

PLASTIC ELECTRICAL TAPE



Does the work of rubber tape *and* friction tape! Saves time with swift once-only splicing . . . looks better, lasts longer because it sticks and *stays*, conforming to any shape. Low bulk makes it especially good for neat, close tolerance work. Won't creep or thin in wide range of temperatures. Costs no more. Anyway you look at it, BULL DOG VINYL PLASTIC is economy all around! BULL DOG (.007" thickness) has minimum dielectric strength of 10,000 volts.



There's a BULL DOG TAPE for every purpose

- Friction
- Rubber
- Plastic

**Sold only
through verified
wholesalers**



**AMERICAN BILTRITE RUBBER COMPANY
BOSTON WOVEN HOSE & RUBBER DIVISION
BOSTON 3, MASSACHUSETTS**

BOSTON



Natural wooded settings and dramatic indoor-outdoor lighting ideas are features of the Kenwood Gardens homes in the Cleveland suburb of Gates Mills.

In Cleveland, Ohio, this house sells for \$40,900

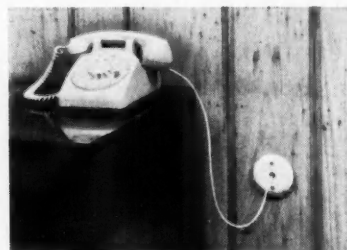
("...and convenience features like concealed telephone wiring help me sell it," says John Koerber of Kenwood Builders)

"Concealed telephone wiring is one of the best investments a builder can make in gaining the confidence and respect of his prospective customers," says John Koerber, Kenwood Builders, Inc.

"The Telephone Company comes in and makes a clean, quick installation while the home is being built. There's no trouble or time loss for

the builder—and telephone rewiring is a great convenience for the buyer. Having concealed telephone wiring in our homes gives us a real sales talking point."

Kenwood Builders is currently constructing 54 custom homes in the Kenwood Gardens suburb of Cleveland, Ohio. The homes range in price from \$38,000 to \$60,000.

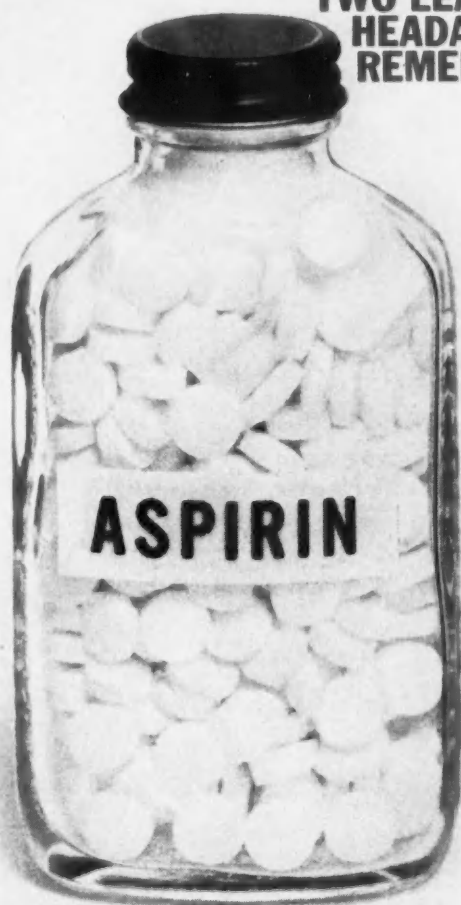


Your Bell Telephone Business Office will help telephone-plan your homes. For details on home installations, see Sweet's Light Construction File, 11c/Be. For commercial installations, Sweet's Architectural File, 33a/Be.



BELL TELEPHONE SYSTEM

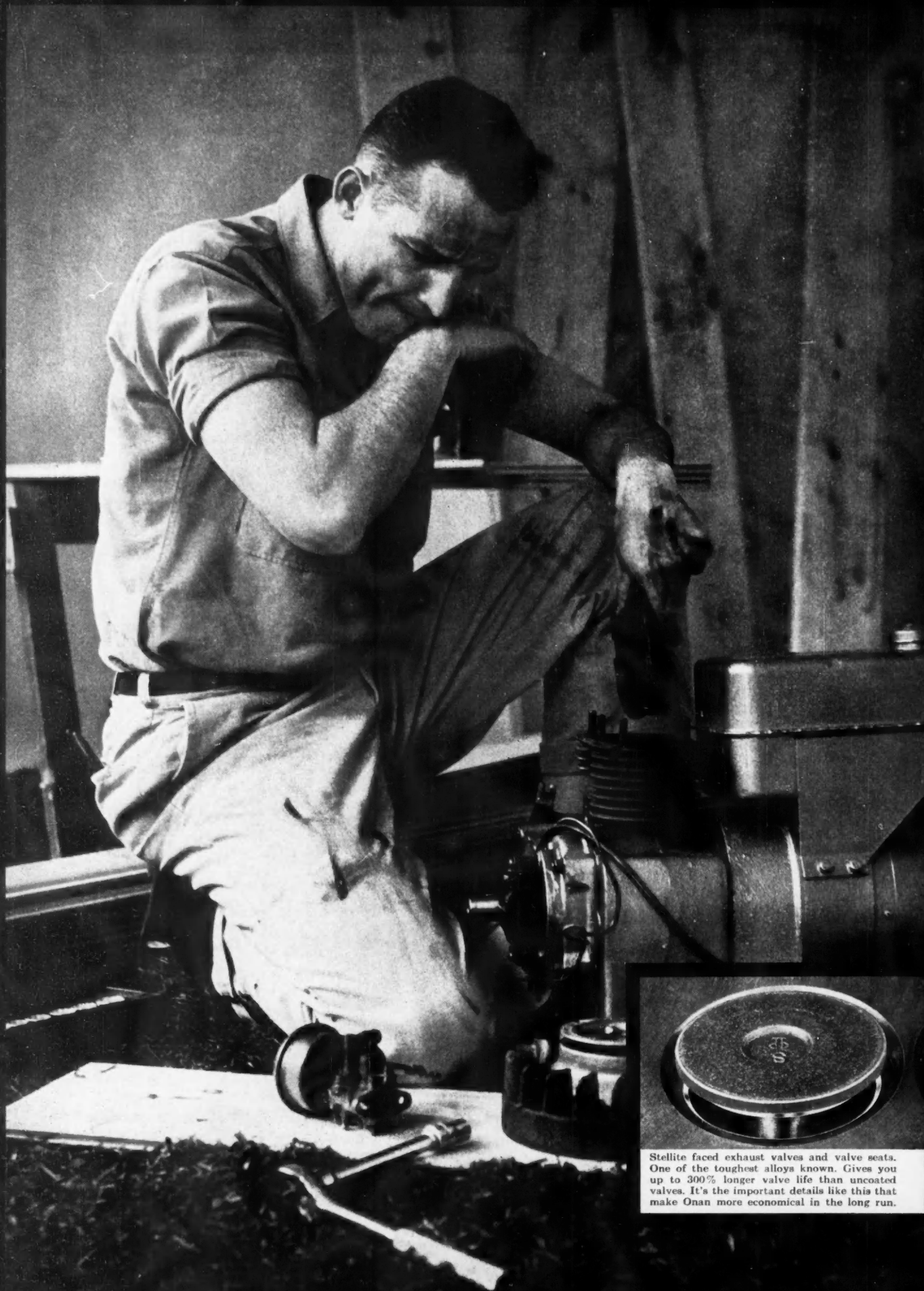
**TWO LEADING
HEADACHE
REMEDIES**



Amprobe snap-around volt-amp-ohmmeters clear up nagging electrical servicing problems faster than pills get into the bloodstream in a tv commercial. That's because Amprobes work three ways to bring instant "relief" to electricians and maintenance men. They use the RS-3 as a **voltmeter** to determine low- or high-voltage conditions (3 ranges: 0-150/300/600 v AC); as an **ammeter** to balance circuits, set relays, take load surveys (5 ranges: 0-5/15/40/100/300 amps AC); and as an **ohmmeter** to measure resistance and check for continuity, opens and shorts (1 range: 25 ohms mid-scale). The RS-3's rotary scale ensures error-free readings; its pointer lock enables you to work with either hand — even when the conductors being tested are hard to get at. No wonder more Amprobes are in use today than all other similar instruments combined. The RS-3 sells for \$52.50. Other Amprobes start at \$19.85. At your distributor.



AMPROBE INSTRUMENT CORPORATION
630 MERRICK ROAD, LYNBROOK, NEW YORK
IN CANADA: ATLAS RADIO CORP., 50 WINGOLD AVE., TORONTO



Stellite faced exhaust valves and valve seats. One of the toughest alloys known. Gives you up to 300% longer valve life than uncoated valves. It's the important details like this that make Onan more economical in the long run.

Picture of a man who bought a "bargain" electric plant

If you want an electric plant for use a few hours a year on an annual camping trip, rent one. Or buy a "bargain." While it is true you get what you pay for, there's no need to pay for more machine than you can use.

But for high-use, professional applications, you need more brawn and stamina. The lightweight piece of equipment just won't deliver full-rated power consistently, won't stand up under heavy use. They're just not built that way.

When you need a workhorse, buy a piece of quality equipment. It'll pay off in the long run . . . often in a matter of weeks or months.

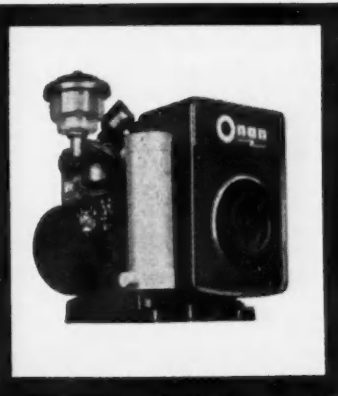
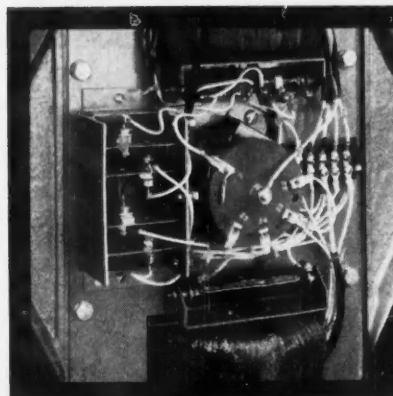
Onan Electric Plants are designed and built for high-use applications. We assume the use is going to be hard and heavy. That's why we use Stellite valves as standard equipment, where others make it an optional "add-on" or can't supply. That's why Onan crankshafts are stronger, connecting rods and bearings bigger.

New Onan "J" Electric Plants have overhead valve design. No other engines in the 6 to 40 horsepower range are OHV. It's the first medium horsepower engine with this big engine feature. What's in it for you? *15% more power with 10% less fuel. Twice as much mileage before lead deposits build up as conventional L head engines.*

Next time you're in the market for an electric plant, estimate *how many hours* a year, *how many years* you expect to use it. The Performance Certified Onan will be your best buy by far. Simple arithmetic will prove it. Call your local Onan distributor. He's in the Yellow Pages, Thomas' Register, Sweet's.

ONAN Division, Studebaker-Packard Corporation • 2570 University Ave., Minneapolis 14

Onan's exclusive Magneciter generator is static excited to eliminate rotating exciter and mechanical regulator. Moving parts are eliminated in both exciter and regulator. Voltage recovery is five times faster than brushless type.





How a lamp buyer can tell the difference

LET GENERAL ELECTRIC PROVE ITS EMPHASIS ON VALUE and your customers will see why they get more for their dollar every time they buy a General Electric lamp. Every one of the fluorescent lamps you see on this page can make your customers more profit from light.

THE NEW F40 gives your customers more light than any other standard forty-watt fluorescent on the market because inside it the Wattage Miser electrode converts formerly wasted watts to useful light.



THE POWER GROOVE* is the most powerful fluorescent made; it puts more light on an area indoors or outside, cuts your customers' costs of installation by reducing the number of fixtures needed.



THE ALL-WEATHER* is the glass-jacketed fluorescent designed by General Electric engineers for cold weather—it is the only fluorescent that maintains full light output without extra enclosure during zero temperatures.





THE SLIMLINE is a lamp your customers may already know—it is the most popular eight-foot fluorescent—and its light output and life ratings were both increased during the past year.

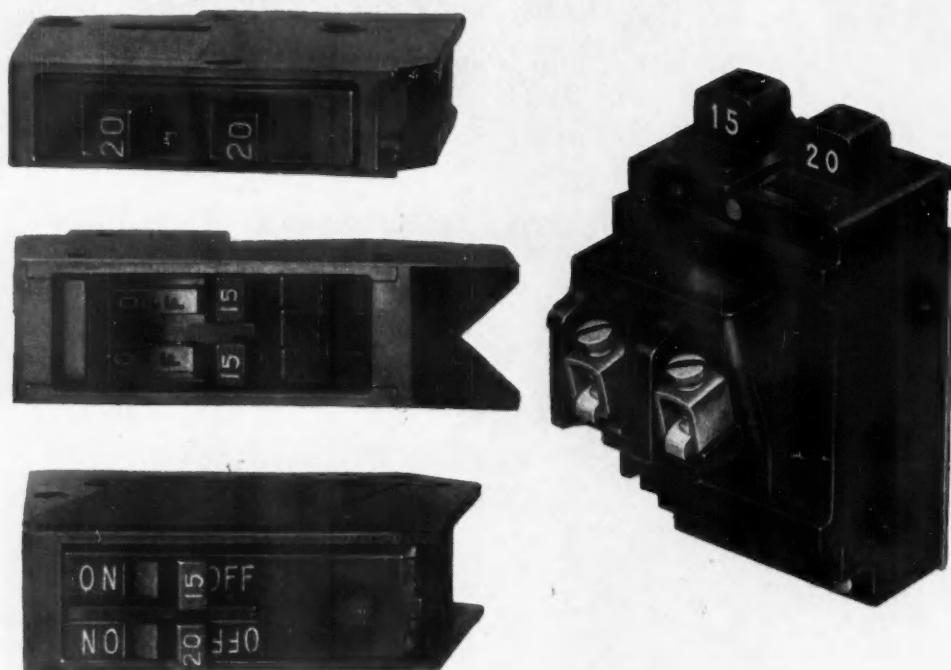
THE HIGH OUTPUT is a better buy than ever, because both its light output and life ratings were increased during the past year, another example of increasing values your customers get from G-E lamps.



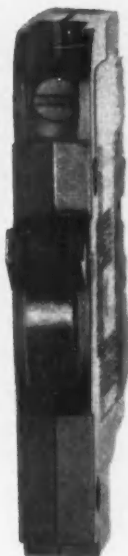
Your customers get extras because of the emphasis General Electric places on all kinds of values—from extra value lamps like those shown here, to extra help in using them, to extra availability through G-E supported stocks in every part of the nation. To learn about these values, call your General Electric office or write General Electric, Large Lamp Department C-250, Nela Park, Cleveland 12, Ohio.

* Registered trademark of General Electric Co.

Progress Is Our Most Important Product
GENERAL  ELECTRIC



Why buy "married couples" when



you can have the better half?



Twin...tandem...duplex—"togetherness" by any name cuts your operating flexibility by 66⅔%. Only Federal Pacific gives you complete flexibility with one-third the cost in the first and still exclusive half-module, single pole 15 and 20 amp Stab-lok® circuit breakers. Mix them or match them in any combination—15-15, 15-20, 20-15, 20-20. You'll find two "better halves" cut inventory and space costs of "married couple" breakers by two-thirds. Another demonstration of the "leader look" from the Company that is celebrating ten consecutive years of continuing leadership in the industry. Ask for Bulletin FPB-1-1000. Federal Pacific Electric Co., Newark 1, N. J.

FEDERAL PACIFIC ELECTRIC COMPANY



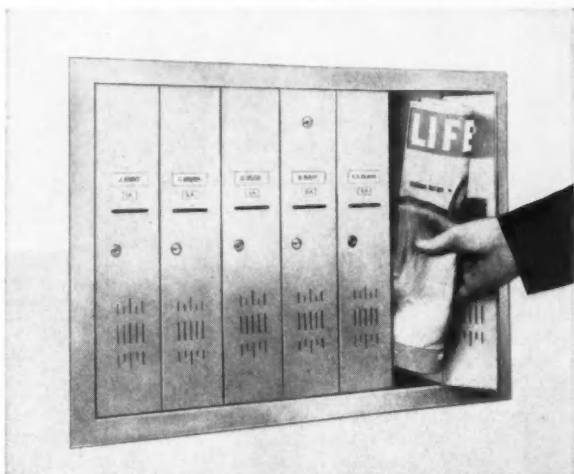
growth through creative energy



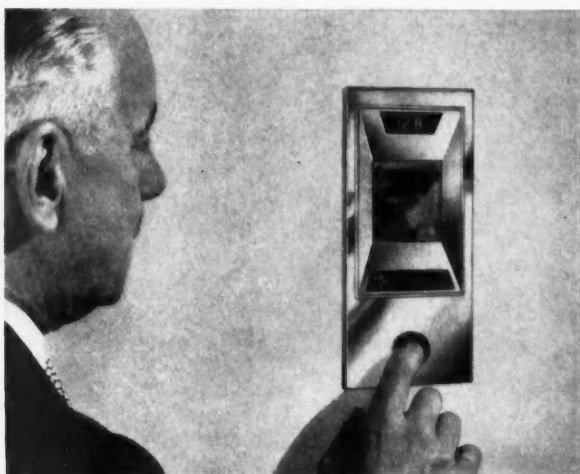
VESTIBULE AND LOBBY TELEPHONES, for communication with apartments, may be combined with mail boxes and alphabetical directories. New, modular design, cordless loudspeaking.



APARTMENT TELEPHONES, with new electronically-produced signals, are modern and streamlined. Simple, plug-in construction reduces installation costs, facilitates maintenance.



"LIFE"-SIZE MAIL BOXES do not bend or tear full size magazines or other mail because of the full-opening door design. Two-piece construction cuts down installation time, simplifies maintenance.



NON-ELECTRIC DOOR CHIMES are completely mechanical and provide lowest cost installation. Models available are: colonial knocker, pushbutton, one-way mirror viewer (illustrated).

Only Auth Offers A Complete Line of APARTMENT HOUSE COMMUNICATION EQUIPMENT

More and more architects, contractors and distributors are calling on Auth for apartment house equipment. The reasons? Auth offers the widest selection of apartment house telephone systems, mail boxes and non-electric door chimes available anywhere in the country. This means you can meet all your requirements from one dependable source. And—no matter how extensive or complex the installation, you're assured of identical high quality and

efficiency throughout the building.

Most important for cost-conscious builders and contractors, Auth's 70 years of experience in manufacturing communication equipment for apartment house service means that every Auth product is engineered for easy, low cost installation, and minimum maintenance.

Auth "Life"-Size Mail Boxes, Vestibule-to-Apartment Telephone Systems, and Non-Electric Door Chimes pic-

tured above are typical of the quality equipment supplied by Auth for thousands of modern apartment buildings. Many other types and models are included in the Auth catalog to meet virtually every apartment house requirement.

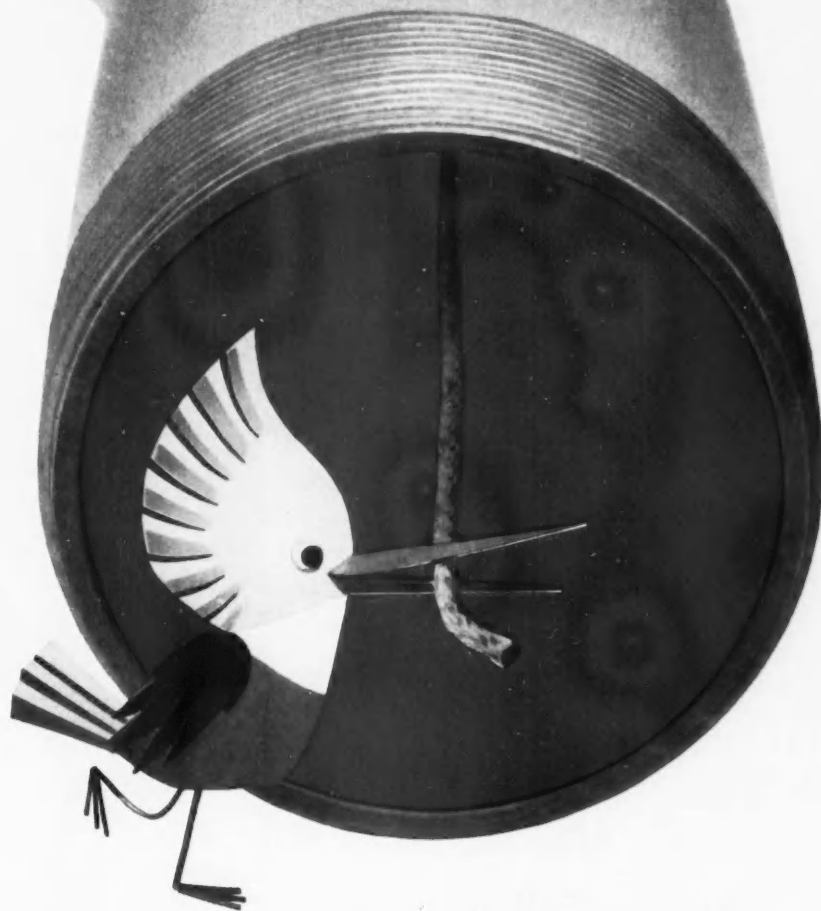
If you are not yet acquainted with Auth apartment house equipment, write for new Auth Catalog Section AM today. A copy is yours for the asking, without obligation.



Auth Electric Company, Inc.
LONG ISLAND CITY 1, NEW YORK

MANUFACTURERS OF APARTMENT HOUSE TELEPHONE SYSTEMS, MAIL BOXES, DOOR CHIMES, AND BELL SYSTEMS

●●●● KAISER ●●●●
KINGFISHER
ALUMINUM CONDUIT
●●●●●●●●●●●●●●●●●●●●



LOOK FOR THE PURPLE LINING THAT MAKES CABLE PULLS 61% EASIER

In tests† comparing lined and unlined conduits (including steel) the purple silicone lining in Kaiser KINGFISHER let cables slip past the third bend up to 36% easier . . . past the fourth bend up to 61% easier.

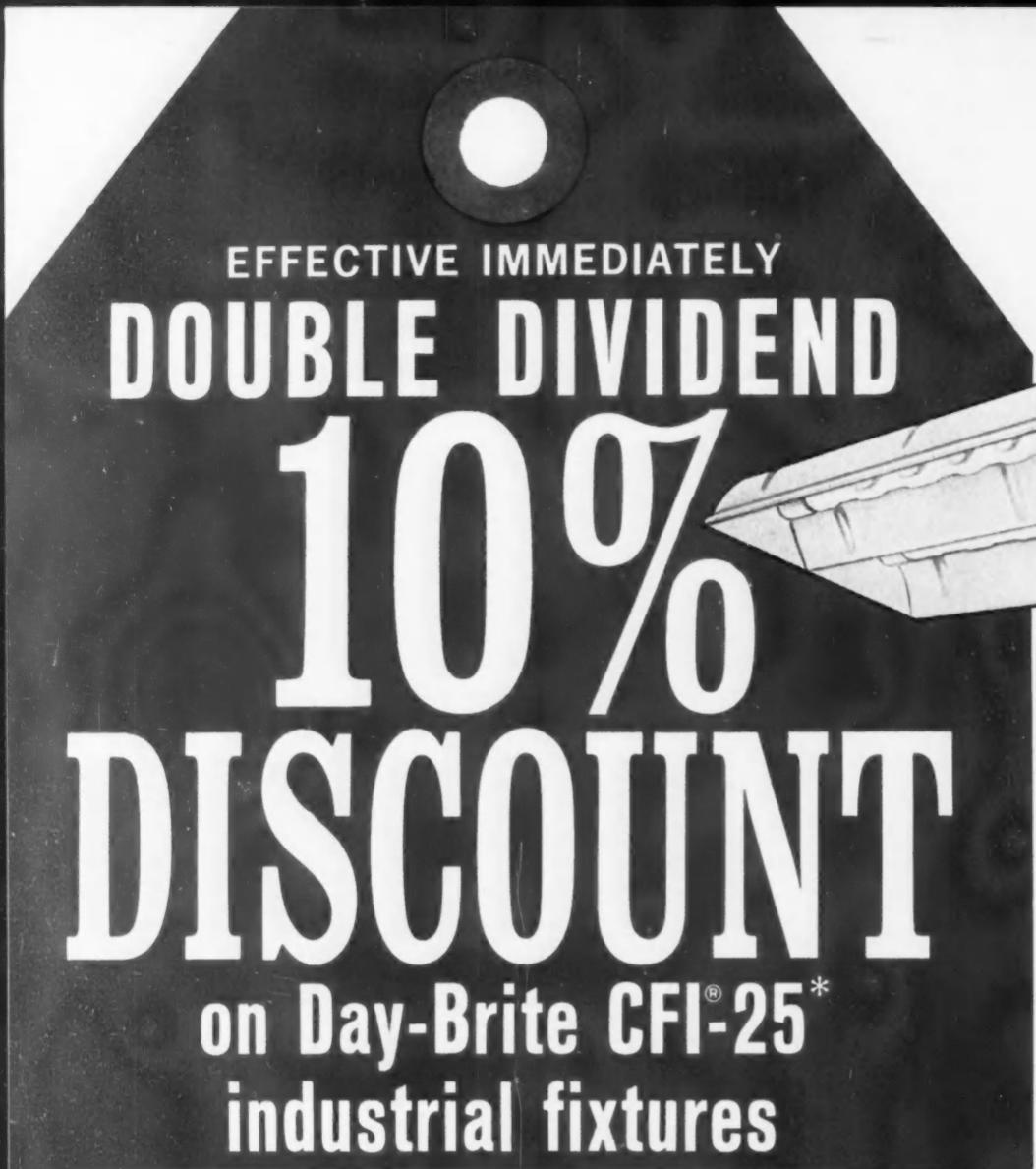
Kaiser KINGFISHER gives you four more time saving differences: light weight, easy cutting, uniform bending, and exclusive high strength forged couplings.

Only competitively priced Kaiser KINGFISHER has all the advantages of aluminum plus slick K-40 silicone lining. Cut installation costs on your jobs: look for the purple lining that makes cable pulls easier . . . from your authorized Kaiser KINGFISHER Distributor.

† Using 3 #2RHW cables in 1 1/4" conduit.

* Trademark of Kaiser Aluminum & Chemical Corporation.

KAISER  **ALUMINUM**



EFFECTIVE IMMEDIATELY
DOUBLE DIVIDEND
10%
DISCOUNT
on Day-Brite CFI-25*
industrial fixtures

Now...

1

LOWER INITIAL COST

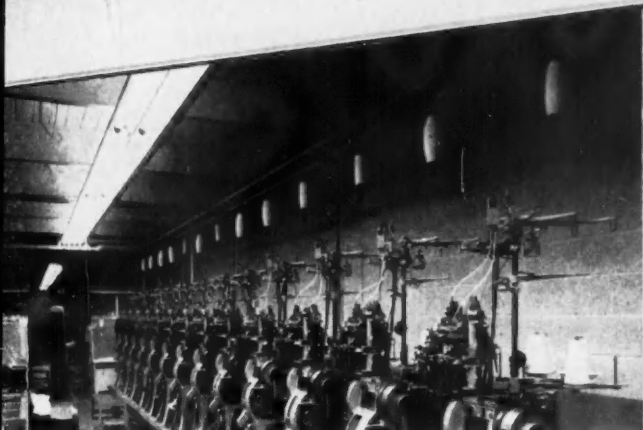
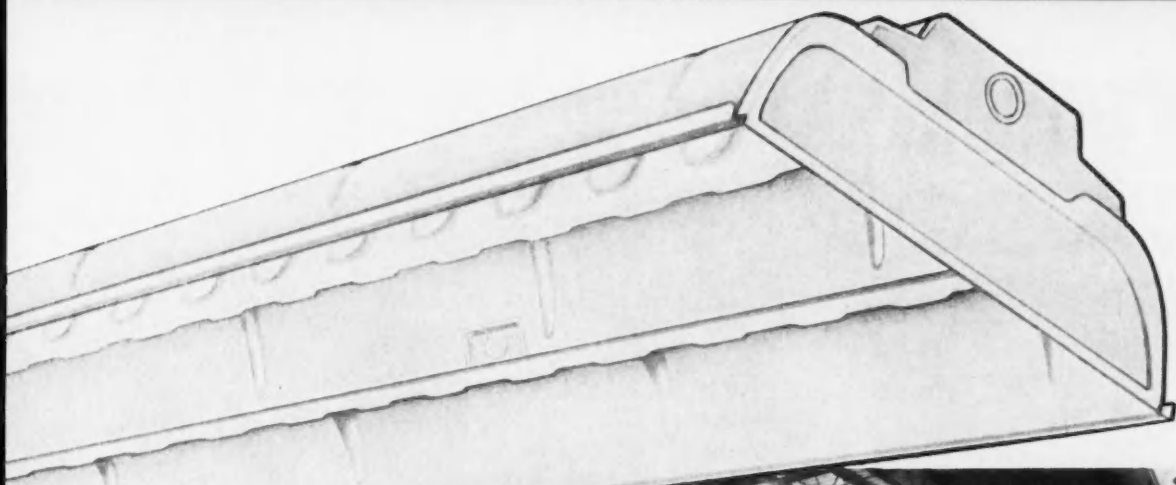
Save 10% on top quality Day-Brite industrial fixtures. They actually cost less than outdated solid top and 10% upright equipment.

2

LOWER MAINTENANCE

One-piece, 8-foot life-time porcelain reflector dramatically reduces cleaning time. Updraft air action provides efficient self-cleaning; light output stays up with fewer cleanings.

For Rapid-Start, Slimline, High Output and Power-Groove lamps.



30% more production in the case of Charmeuse Hosiery Co., Asheboro, N. C., with 30% fewer rejects.



10% more production for B. B. Walker Shoe Co., Asheboro, N. C., when just 3% would have covered the cost of the entire Day-Brite installation.

You get famous Day-Brite quality at substantially lower cost

If you are building a new plant or relighting an existing one, now there's no reason to settle for anything less than genuine Day-Brite "Comfort For Industry" lighting. Here's why:

There is no change in the fixture quality or performance, yet you save on initial cost. In 1959, CFI-25 was reduced in price up to 17.7%. Increased production efficiencies make this additional 10% possible. With this new 10% cost cut, these fixtures are now priced *below* much inferior industrial lighting equipment.

You save on installation. Day-Brite designs and builds these fixtures to go up fast, line up easily with 8-foot rigid channel, one-piece reflector.

You save on increased production. The same workers with the same tools in the same floor space will produce *more* with Day-Brite CFI lighting.

And today, at the new lower cost, Day-Brite CFI lighting is an even better investment than ever before.

Get the whole story. Call your Day-Brite representative for the *facts* and the *fixtures*...or mail coupon.



AN EMERSON ELECTRIC COMPANY

DAY-BRITE LIGHTING, INC.

St. Louis, Mo., Tupelo, Miss., and Santa Clara, Calif.
Amalgamated Electric Corp., Ltd., Toronto 6, Ont.

**NATION'S LARGEST MANUFACTURER
OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT**

D-481

Day-Brite Lighting, Inc.
6260 N. Broadway
St. Louis 15, Mo.

Dept. EMC

Gentlemen: Send full information about Day-Brite CFI "Comfort For Industry" lighting fixtures.

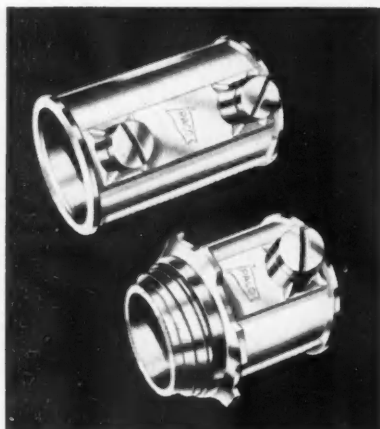
NAME _____ TITLE _____

FIRM _____

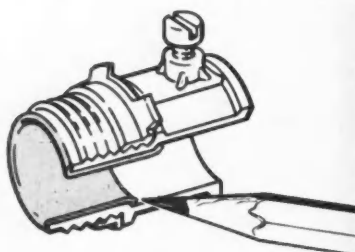
ADDRESS _____

CITY _____ ZONE _____ STATE _____

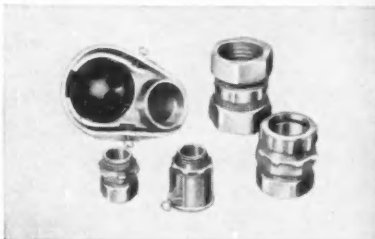
NEW FROM RACO



RACO E.M.T. Pressure Cast Set Screw Fittings with Staked Screws. These rugged new fittings have staked screws that are flush with the inside. You never have to back off screws and the screws never fall out. Designed of top quality alloy. Concrete tight. Deep cut threads speed up installation. Connector and coupling available in five sizes $\frac{1}{2}$ " to 2".
UL Approved

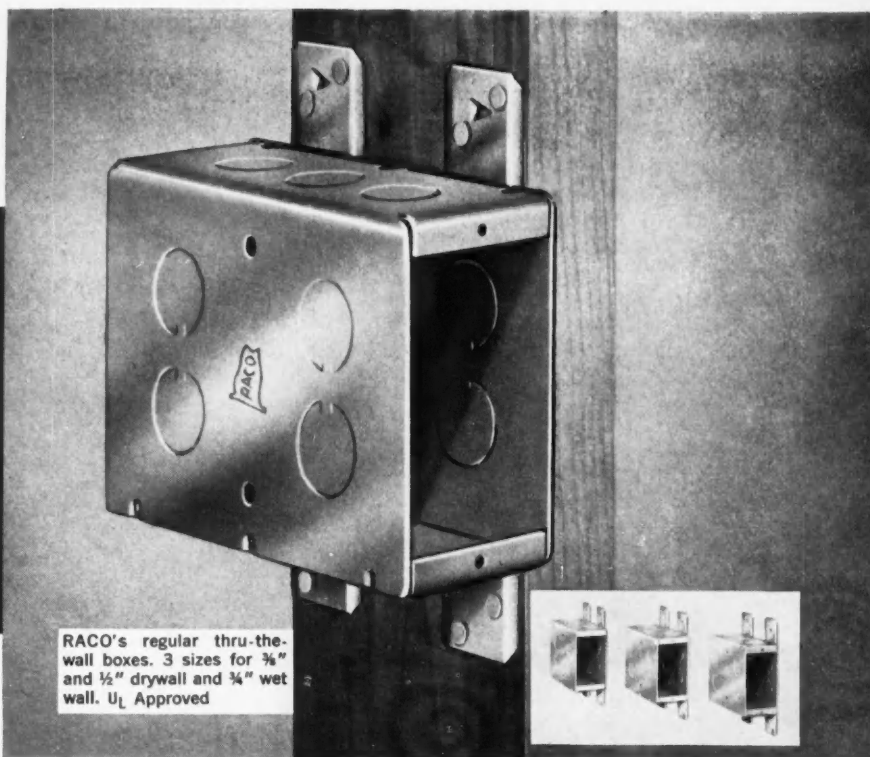


E.M.T. Insulated Throat Set Screw Connector. Cutaway above shows how RACO has rolled the insulated throat over the shoulder. This feature prevents throat from falling out, even with temperature changes. Eliminates the need for a separate plastic bushing. Available in six sizes $\frac{1}{2}$ " to 2".
UL Approved



FITTINGS For Every Need

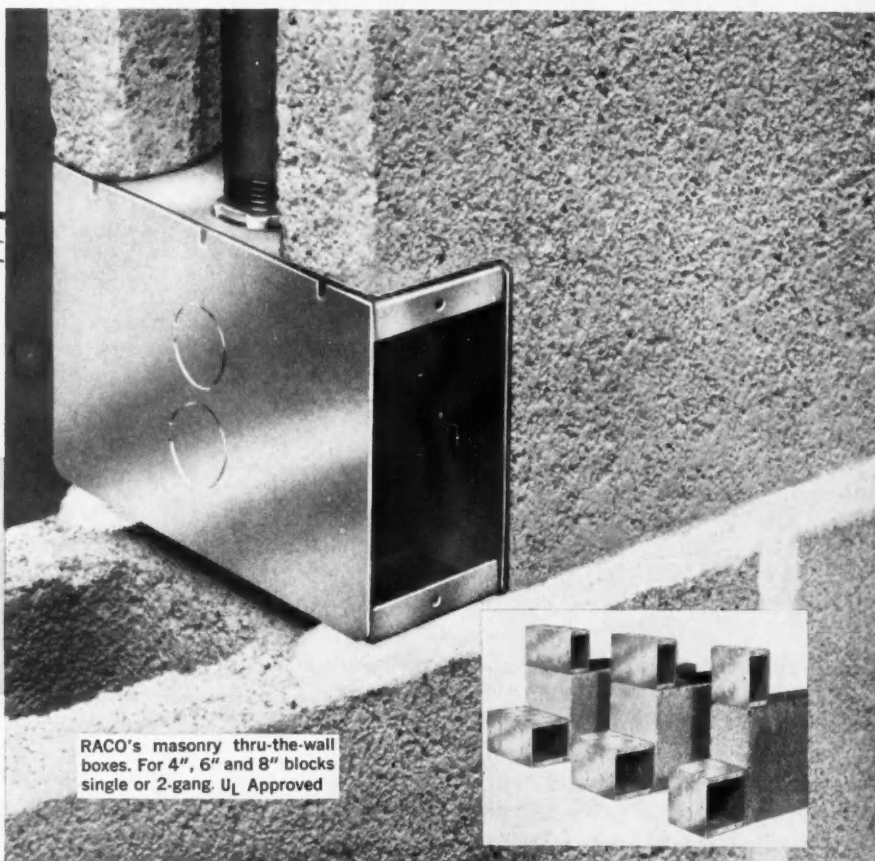
- Rigid Conduit
- E.M.T. (Thinwall Conduit)
- Armored bushed cable, flexible metallic tubing and non-metallic cable
- Service entrances



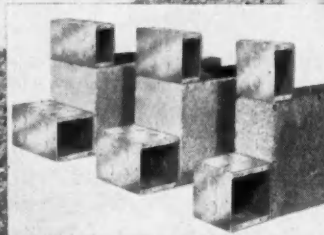
RACO's regular thru-wall boxes. 3 sizes for $\frac{3}{4}$ " and $\frac{1}{2}$ " drywall and $\frac{3}{4}$ " wet wall. UL Approved



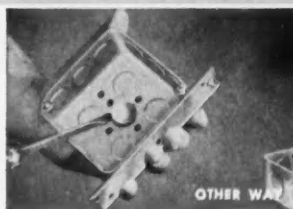
Cut Costs with



RACO's masonry thru-wall boxes. For 4", 6" and 8" blocks single or 2-gang. UL Approved

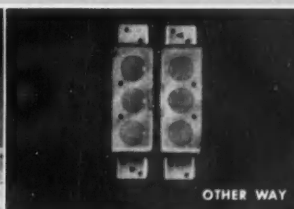


REGULAR CONSTRUCTION **SAVE 50%**



Above: Remove KO's on both 4" square boxes.

Below: Nothing to remove thus saving you installation time.



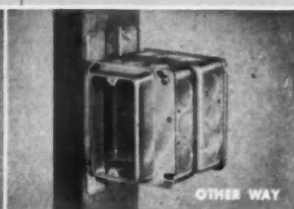
Above: Nipple two 4" boxes together, screw locknut on nipple and tighten.

Below: No nipping and no locknut required. RACO saves you material and time.



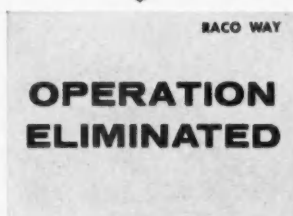
Above: Nail two 4" boxes to studding.

Below: One RACO thru-the-wall box, with mounting bracket can be nailed to the stud quickly and easily.

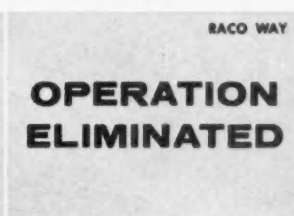


Above: Two 4" square covers put in place.

Below: No covers needed, thus ... eliminating a costly operation.



OPERATION ELIMINATED



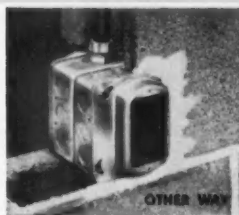
OPERATION ELIMINATED



OPERATION ELIMINATED

RACO Thru-the-Wall Boxes

MASONRY CONSTRUCTION **SAVE 38%**



Above: An oversized irregular area must be cut in the block for two 4" boxes.

Below: Fitting square cornered RACO boxes require less work.



Above: Remove KO's from two 4" boxes.

Below: Nothing to remove saving you time on-the-job.



Above: Nipple two 4" boxes together, screw locknut on nipple and tighten.

Below: No nipping required eliminating costly labor and material.



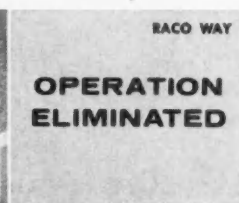
Above: Two plaster covers installed on boxes.

Below: No covers needed on RACO thru-the-wall boxes.

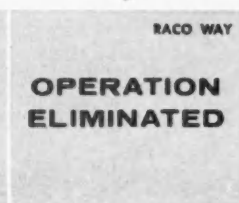


Above: Mudding around is a messy, time consuming job. Holes have to be retapped.

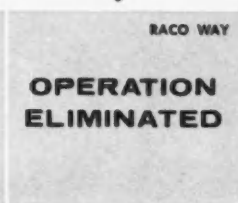
Below: RACO boxes give you a neater, faster job. Device holes are inside ... no retapping.



OPERATION ELIMINATED



OPERATION ELIMINATED



OPERATION ELIMINATED



ALL-STEEL EQUIPMENT INC. Aurora, Illinois



BEFORE YOU INSTALL ANOTHER MOTOR STARTER,
MEASURE ITS TOTAL VALUE

Compact size is important, but what other factors should you consider in making your choice?

Important to have a compact starter when space is at a premium? You said it! And, you wouldn't even consider a motor starter that won't deliver dependable performance, easy maintenance, long contact life, and quick installation. They're all quality standards in which Cutler-Hammer starters have long excelled.

But, there's more to consider when selecting a motor starter. Hundreds of contractors have told us they often choose Cutler-Hammer starters because of certain *non-product* factors which combine to give total value every time:

"OFF-THE-SHELF" AVAILABILITY. Over 91% of your standard starter needs are available from local stocks. Even very special requirements can often be handled overnight. With Cutler-Hammer, complete starters or replacement parts are a phone call away . . . from the balanced stocks of more than 600 Distributors backed by 66 district offices and 17 regional warehouses.

COMPLETE SERVICE. Both your Distributor and your Cutler-Hammer man treat your application problems as their own. Together they are equipped to handle your special requirements—and emergencies—in just a matter of hours.

FULL PRODUCT LINE. Cutler-Hammer offers you a complete line of ten NEMA sizes . . . 00 through 8. The entire starter line is designed to rugged industrial standards . . . is proven in hosts of applications . . . and exceeds NEMA requirements in every respect.

So, next time you're contemplating a motor starter, don't stop short with an evaluation of product factors only. Also measure the non-product values you get with Cutler-Hammer's immediate availability, complete service, and a full product line. For complete details, send for bulletin LO-70-S241. And for Cutler-Hammer's *total-value* story, call your local Cutler-Hammer Distributor today!

WHAT'S NEW? ASK...

CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wisconsin • Divisions: AIL; Mullenbach • Subsidiaries: Uni-Bus, Inc.; Cutler-Hammer International, C.A. • Associates: Cutler-Hammer Canada, Ltd.; Cutler-Hammer Mexicana, S.A.



HOW ELSE
SHOULD YOU
MEASURE A
MOTOR
STARTER?



TOOLS THAT MAKE MORE MONEY!

B-M { THE ORIGINAL INDENTER TOOLS THE ORIGINAL INDENTER FITTINGS

These are the tools and fittings that have revolutionized setting up thin wall conduit. B-M, the Original Indenter Tools have been working efficiently for over 25 years—doing more work easier and lowering installation costs. Now, B-M Indenter Tools have been re-engineered and redesigned to reduce size and weight to increase efficiency and ease of operation. These B-M Indenter Tools with the new patented compound leverage are now only plier size. They are lighter to carry, easier to use and the leverage does the work.

B-M, the Original Indenter Fittings go with B-M Indenter Tools like ham and eggs. Contractors who demand the best always call for the Original B-M Fittings for the soundest, most permanent installations possible. The fittings are concrete tight and vibration resistant. All steel, heavy gauge fittings are heavily bright zinc plated and have been salt spray and acid drip tested for corrosion resistance. Additional features are extra heavy bonding locknuts. Smoothly rounded edges or bushed throat type connectors make fishing easier and prevent damage to insulation.

For fast, safe installation plus complete protection always specify the Original B-M Indenter Fittings and the Original B-M Indenter Tools.



BM-21B
1/2" Connector
BM-22B
3/4" Connector
BM-23B
1" Connector



BM-41
1/2" Coupling
BM-42
3/4" Coupling
BM-43
1" Coupling



BM-51
1/2" Offset Connector
BM-52
3/4" Offset Connector



BM PLIER SIZE INDENTERS
BM-No. 609 1" BM-No. 608 3/4"
BM-No. 607 1/2"



**ACTUAL SIZE
THE NEW
POCKET SIZE TOOLS!**

The rugged, light weight
No. 607 Indenter for
1/2" fittings is
shown here
full size.

BRIEGEL

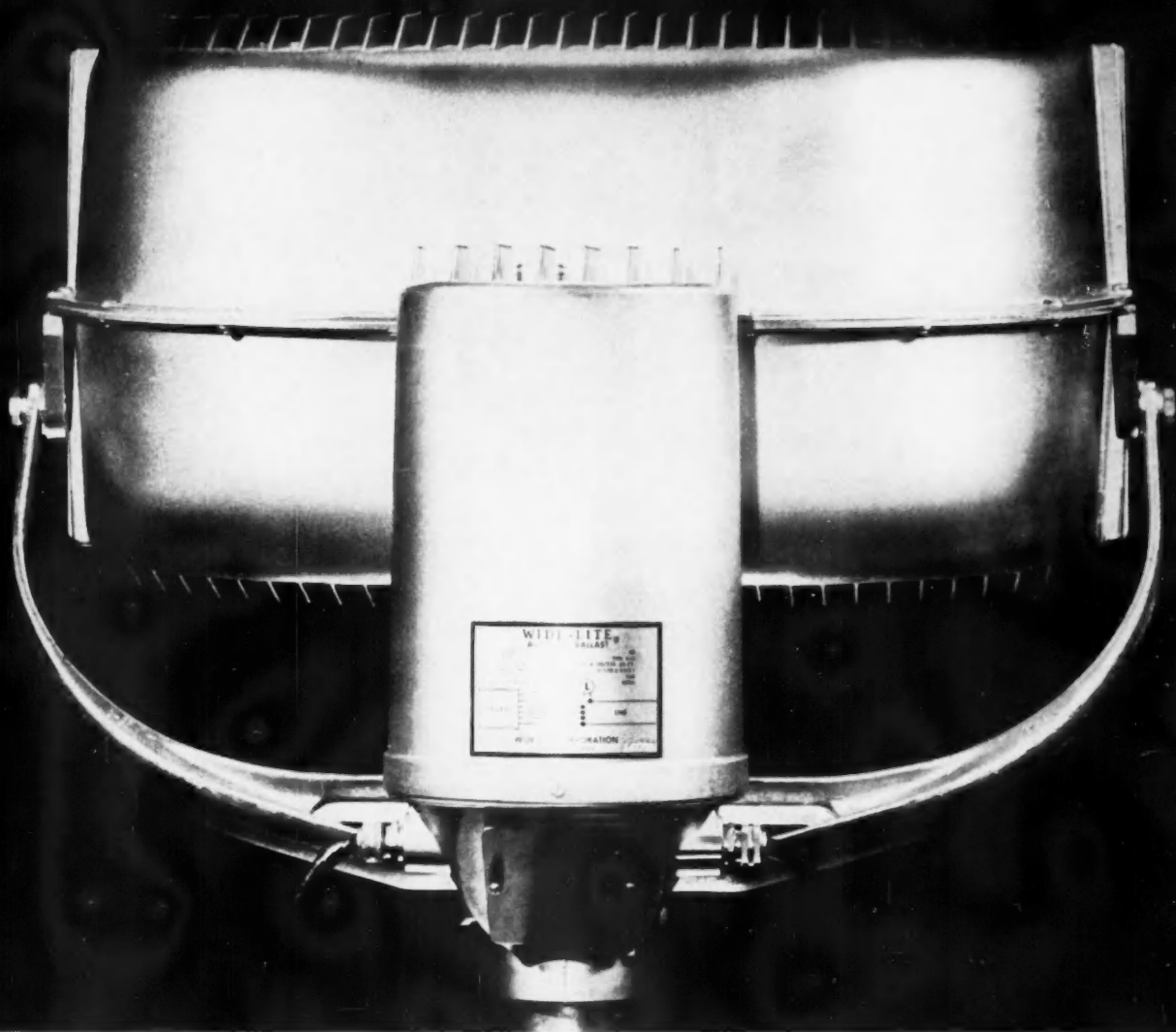
METHOD TOOL CO.
GALVA, ILLINOIS

All B-M indenter type fittings for
exceed the requirements of U. L. file
card E 10863 and Federal
Specifications W-F-406.



*BM 51 and 52 offsets are not listed as concrete tight.

USED THE MOST FROM COAST TO COAST



This is a photo of longer lamp life!

Why?

Because it shows the exclusive features built into every Wide-Lite floodlight to assure proper cooling. And mercury vapor lamps last longer when cooled properly!

Notice the deep, die-cast fins in the top and bottom of the fixture. How many other 1000-watt floodlights have the 1,872 square inches of heat-dissipating surface the Wide-Lite unit has? You guessed it. None.

Notice, too, the ballast location. It's connected to the fixture for easy one-unit mounting. But it is a *separate* component so that ballast heat cannot combine with lamp heat to compound the problem. And it has 348 square inches of heat-dissipating surface all its own.

Besides making lamps last longer,

these exclusive heat control features give Wide-Lite floodlight owners another big advantage: proper color-correction. Because if a color-corrected mercury vapor lamp runs too hot, it loses its ability to "correct" the color of the light it projects, and you get the eerie coloring effect of clear mercury vapor lamps.

Next time you see a big Wide-Lite floodlight on the job, take a look at the 2,220 square inches of cooling area built into the fixture and ballast. That's 2,220 reasons why the Wide-Lite is so provably better.

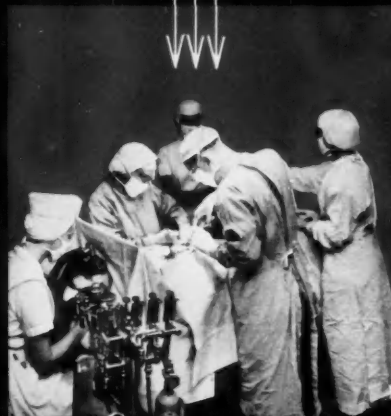
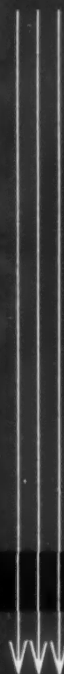
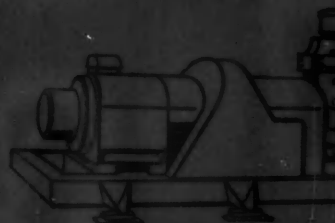
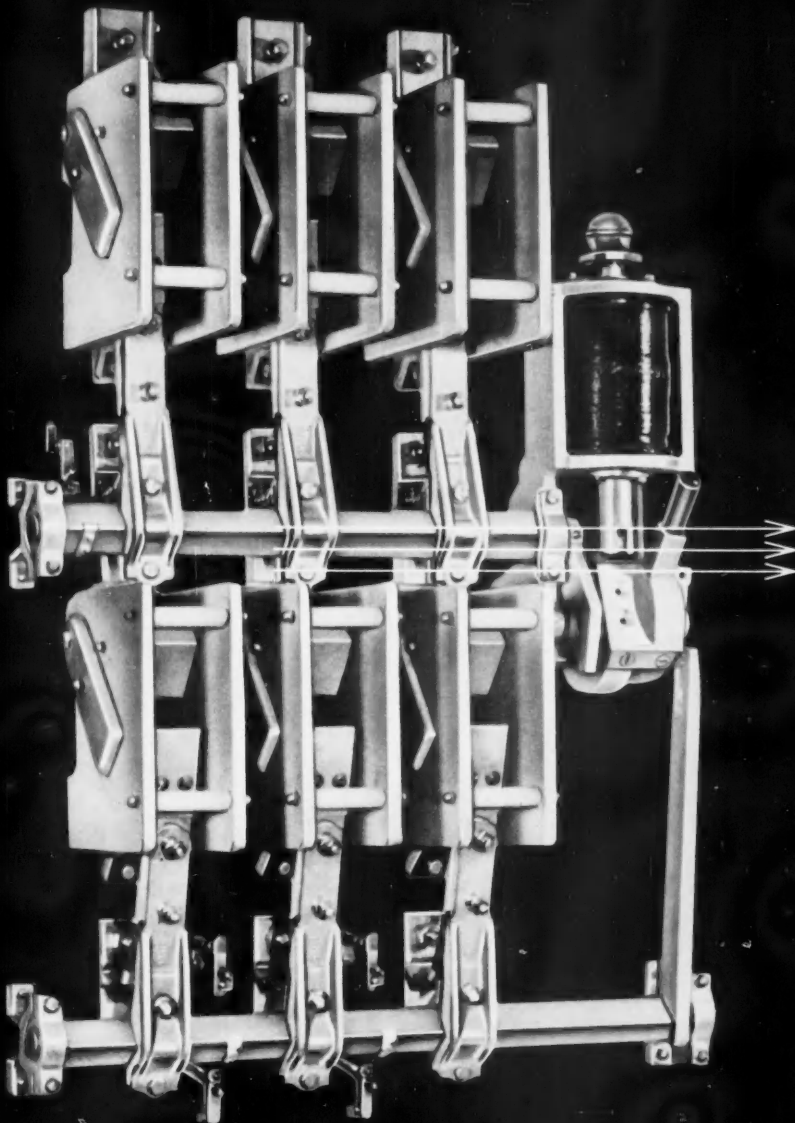
Why not write for all the *other* reasons?

WIDE-LITE CORPORATION, a Division of Esquire, Inc., Dept. YB 11, 4114 Gulf Freeway, Houston 1, Texas.



**FLOODLIGHTS
BALLASTS
INDOOR LUMINAIRES**

ASCO® complete emergency control systems...

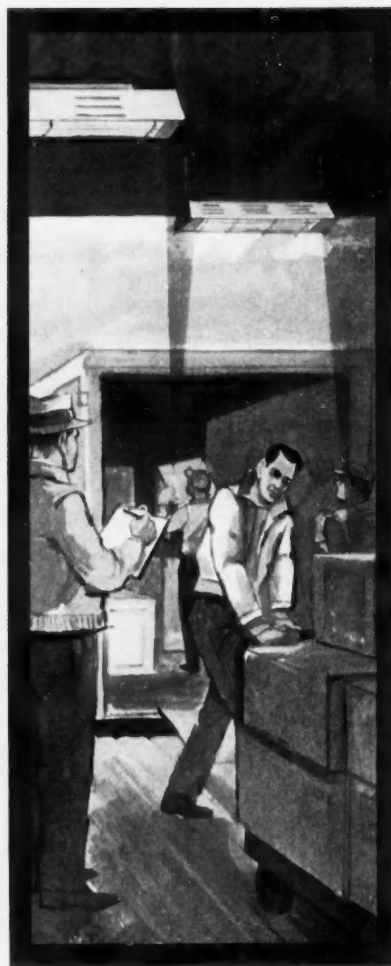
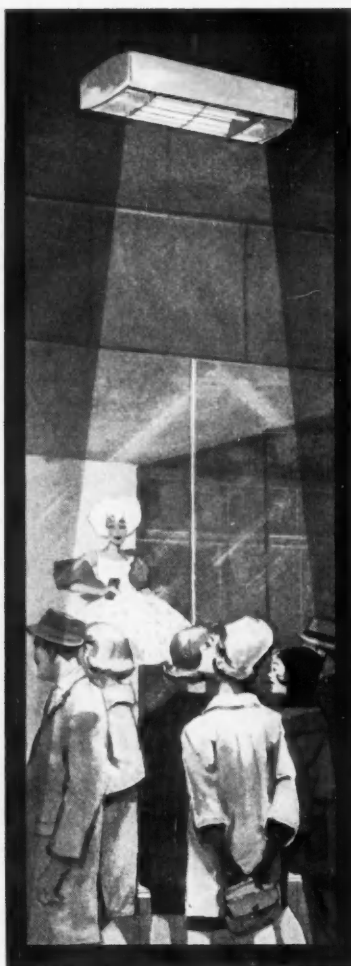
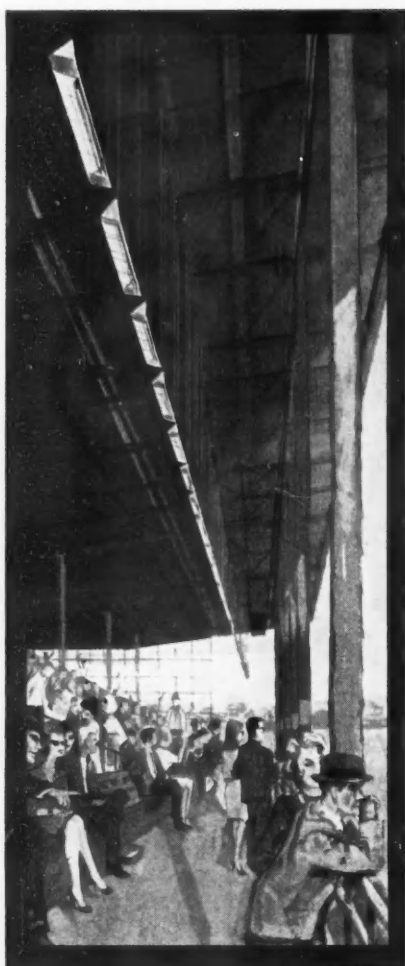


....put standby power in action.....fast

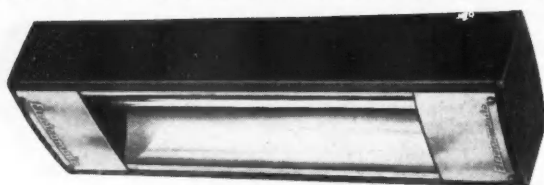
A life depends upon light. If power fails, what happens? In a fiftieth of a second an automatic transfer switch contact closes, energizing an automatic engine starting control. When the standby power source reaches the proper voltage and frequency, the transfer switch transfers the load to the emergency plant — time of transfer: 1/30th to 1/6th of a second! The operating table is again flooded with light; the skilled surgeon continues. These dependable switches are ASCO Automatic Transfer Switches and Automatic Engine Starting Controls. They are the indispensable ingredients in emergency control systems that **must** operate on normal power failure. Fifty years of experience and an unflagging dedication to quality have established complete confidence in ASCO reliability.

Concepts, specifications and complete catalog information are detailed — on all control components — in helpful literature that ASCO offers to those who can benefit from this information. Ask for it on your company letterhead, specifying catalogs on ASCO Emergency Control Systems.

Automatic Switch Co. 50-J Hanover Rd., Florham Park, N. J., FRontier 7-4600 — Automatic Transfer Switches • Solenoid Valves • Electromagnetic Control



Electromode QUARTZONE **ELECTRIC** **RADIANT HEATERS**



Quartzzone Lamp Heaters



Quartzzone Tube Heaters

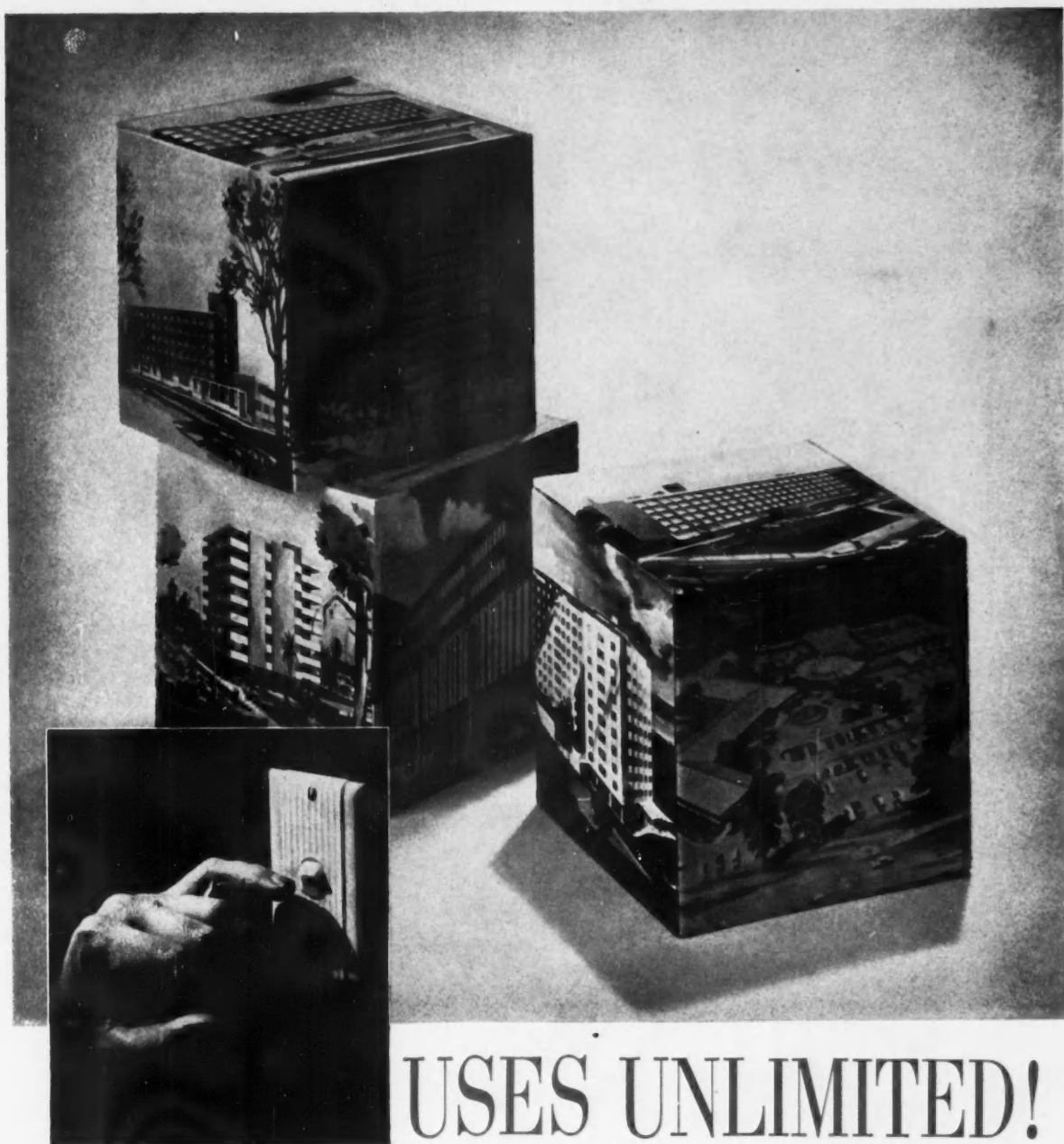
COMPLETE LINE: Features more than 400 types, models and capacities of heaters and heating systems, all with exclusive Safety Grid. The solution to your heating problem is in the Electromode catalog.

► For complete specifications and literature write to:

Perfect for indoor and outdoor heating. Electromode Quartzzone infrared heating is totally different from other types of heating in both principle of operation and sensation of warmth that is enjoyed. It is the nearest thing to natural sunlight, and is transmitted in much the same way. Infrared rays have a particular and useful characteristic. They speed through the air to heat only the persons or objects directly—and not the surrounding atmosphere. No heat is wasted enroute. That is why these heaters are often the only economical method of providing suitable warmth to persons in certain large and exposed areas. Some areas are impossible to heat satisfactorily otherwise. Infrared heaters therefore open up a wide avenue of new applications for controlled spot heating in home, farm, commerce and industry needs.

ELECTROMODE division of Commercial Controls Corp.

DEPT. ECM 92 ROCHESTER 3, NEW YORK



USES UNLIMITED!

ONLY ROCKER-GLO WITH SO MANY
STYLES OFFERS THE UNUSUAL TOUCH
FOR EVERY KIND OF BUILDING

Write Dept. ECM-962

PASS & SEYMOUR INC.
SYRACUSE 9, N. Y.

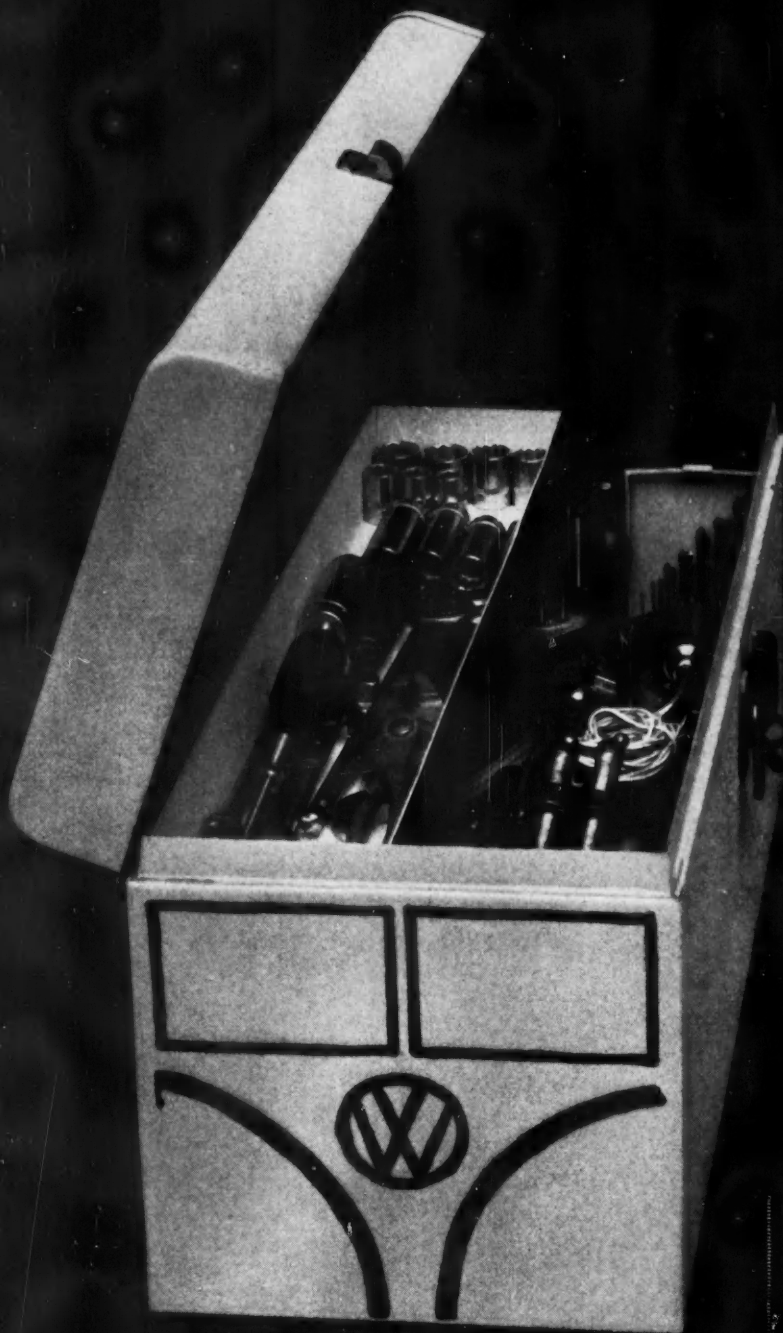


BOSTON

CHICAGO

LOS ANGELES

SAN FRANCISCO



©1982 VOLKSWAGEN OF AMERICA, INC. *SUGGESTED RETAIL PRICE

Our truck is a big tool box.

You can load up a VW Truck with 1,000 lbs. of tools or parts or equipment. And still have room for 800 lbs. more.

Our truck will actually tote 1,830 pounds; 800 more than a half ton.

Yet, the VW is 3 feet shorter and weighs only half as much as a half ton.

It's our boxy shape that does it.

Outside, the VW doesn't have a long front hood. Because our engine's in the rear. For extra traction.

Inside, there's 170 cubic feet of usable space. With a 4-foot-wide side doorway. And double side doors. And a rear door. (And, if you want it, another side doorway in the far side for 80 bucks* more.)

Anderson & George Murray of Orleans, Mass., carry a big table saw over the engine in back of their VW.

They also carry so many tools and stuff that people have said: "It looks like you have the shop right in the truck."

They do.

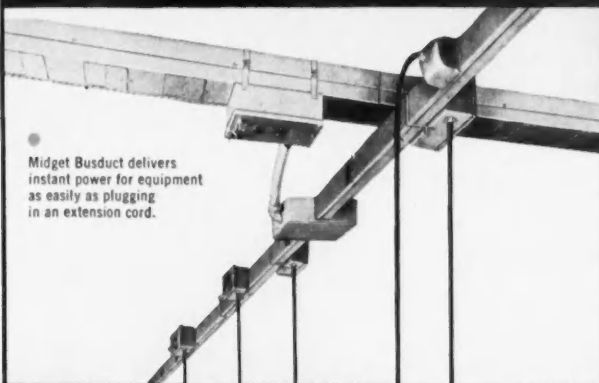


EXTEND ANY PRESENT BUSDUCT SYSTEM TO ANY PLANT AREA FOR LESS THAN WIRE & CABLE COST!

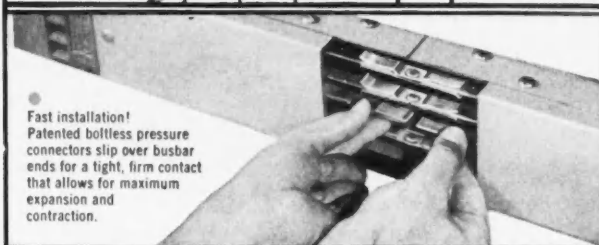
FRANK ADAM

*Power
Plug in*

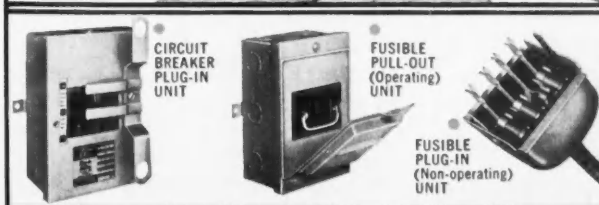
**MIDGET
BUSDUCT**



Midget Busduct delivers instant power for equipment as easily as plugging in an extension cord.



Fast installation! Patented boltless pressure connectors slip over busbar ends for a tight, firm contact that allows for maximum expansion and contraction.



Instant 100-Amp. Plug-In Power When And Where It's Needed With MIDGET BUSDUCT

Although the initial price of Midget Busduct is slightly more than wire and cable, the saving on labor alone results in a surprisingly lower installed cost.

No cutting or bending, no threading of conduit is necessary with Midget Busduct. It is 100% salvable when plant layouts are changed, or machine relocations are made. Quick availability of plug-in units permits load connections in minutes to save even more on labor.

Either copper or aluminum conductors can be furnished. Midget Busduct has plug-in outlets every 12", on one or both sides, to accommodate several types of plug-in units, (three are shown at left), in 30 to 100 amp. capacity. Ask for complete information and prices.

FRANK ADAM ELECTRIC COMPANY
P. O. BOX 357, MAIN P. O. • ST. LOUIS 56, MO.

busduct • panelboards • switchboards • service equipment
safety switches • load centers • Quikmeter



RENEWAL PARTS
DIVISION

Clancy Atkins is up to here

in replacement parts



Clark customers, happily, haven't much need for Clancy Atkins' services—he's our replacement parts manager.

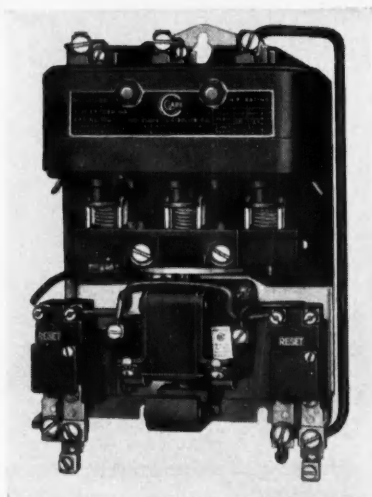
To while away his time, Clancy keeps a fine set of records. Example: During the past seven years, Clancy has shipped only one set of replacement contacts for every 23 Clark CY size 1 starters sold.

Such reliability may be a problem for Clancy, but it can mean big value to you—when productivity of men, machines and materials depends upon consistent performance, repeated millions of times, by vital electrical controls.

Compare all makes with Clark when you buy or replace electrical controls. Compare for quality construction, ease of installation and long service reputation.

And, compare price. Clark controls cost no more.

6282

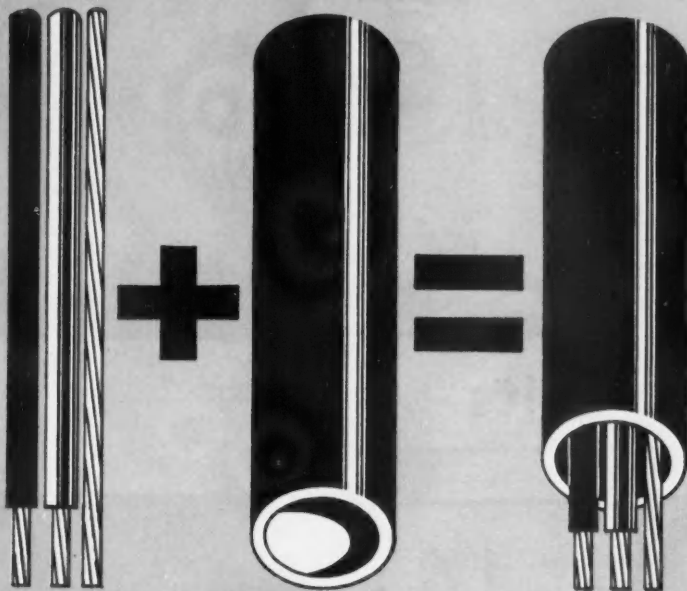


90 WAYS NEWER! Clark's CY starter line retains its basic time-proven design, but improvements to increase operating efficiency are being made constantly. On this size 2 starter, for example, 90 separate improvements have been made since 1950. The starters we make today may put Clancy out of business entirely.

THE  **CLARK** CONTROLLER COMPANY

MAIN PLANT: CLEVELAND, 10 • WESTERN PLANT: LOS ANGELES, 58
IN CANADA: CANADIAN CONTROLLERS, LIMITED, TORONTO, ONT

TRIANGLE UNIT TYPE DUCT-CABLE SYSTEM



**A COMPLETE,
PRE-ASSEMBLED
UNDERGROUND STREET
LIGHTING CIRCUIT...
ALREADY ENCLOSED
IN PLASTIC DUCT!**

BIG SAVINGS IN TRANSPORTATION... TRENCHING... INSTALLATION

Triangle's Unit Type Duct-Cable System[®] has been designed and engineered to overcome the disadvantages of the installation of duct in short lengths with sleeve type couplings. Triangle's method provides a vastly superior system at considerably lower cost through the use of a "UNIT ASSEMBLY" consisting of the required number of parallel conductors in long length coilable plastic duct on reels.

- **Easier To Transport**—No separate units to be transported and assembled but a complete system, ready for installation.
- **Easier To Trench**—There's no need to work in the trench, therefore only a small slot trench is required. Or, just plow the system in.
- **Easier To Install**—Duct need not be straightened too much, since some snaking is necessary to accommodate expansion and contraction. This system eliminates use of fish wire, splice boxes and fittings to meet changes in route and profile. Eliminates the necessity for sand bedding, protective planking or other precautions normally required for direct burial cable.
- **High Impact Strength**—Withstands heavy pounding of overhead traffic, severe abuse by hand tools such as shovels and picks.

[®] Patent applied for

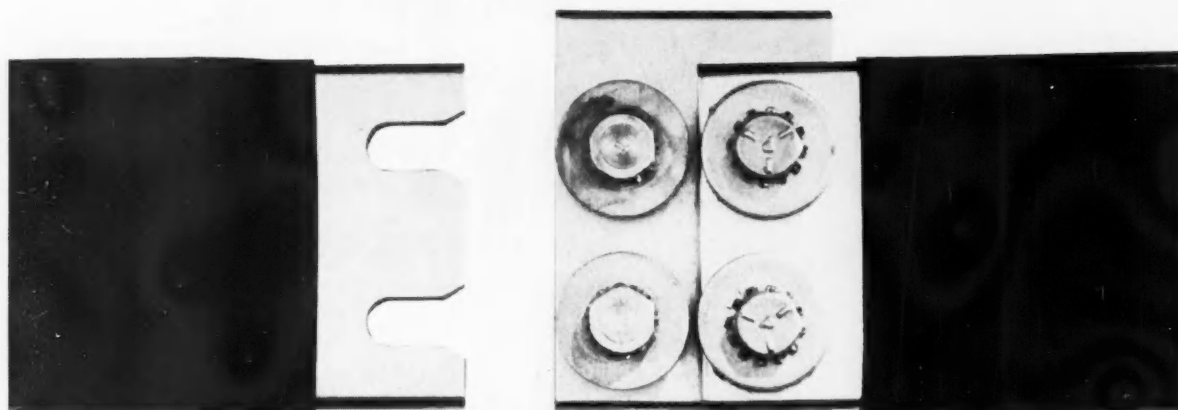
For complete Technical information on the
Triangle Unit Type Duct-Cable System, write:

WIRE AND CABLE DIVISION
TRIANGLE CONDUIT & CABLE CO., INC.
NEW BRUNSWICK, NEW JERSEY

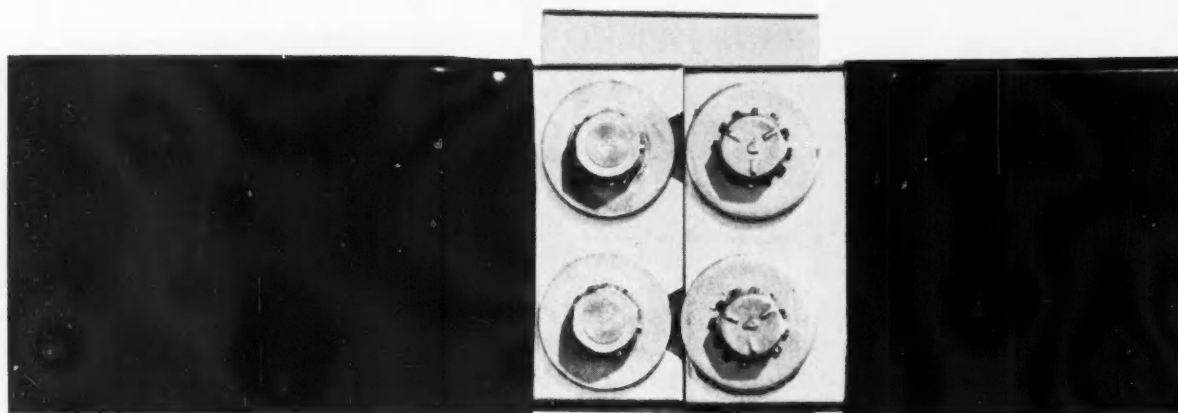
"It MUST Be Right!"



just slip in place



and tighten bolts



Westinghouse Plug-In Low Impedance Bus Duct cuts installation costs

Exclusive Westinghouse factory-installed captive hardware eliminates the time-consuming alignment of joints; threading and fastening of loose hardware. Just slip together and tighten from either side for a high strength, low power loss connection. Its lighter weight and small size (up to 33% smaller than other makes) contribute to easier handling especially on limited-space jobs. In one actual installation, studied by S. M. Dix and Associates of Grand Rapids, Michigan, two men installed a complete section of Westinghouse duct in less than eight minutes! Installed cost is the important cost, and no other plug-in low impedance bus duct can be installed faster than Westinghouse.

In ratings of 600 to 4000 amperes, this duct is available with copper or aluminum conductors and a complete line of fittings, hangers, and plug-in units. For further information contact your Westinghouse representative; or write, Westinghouse Electric Corporation, Standard Control Division, Beaver, Pa. *You can be sure . . . if it's Westinghouse.*

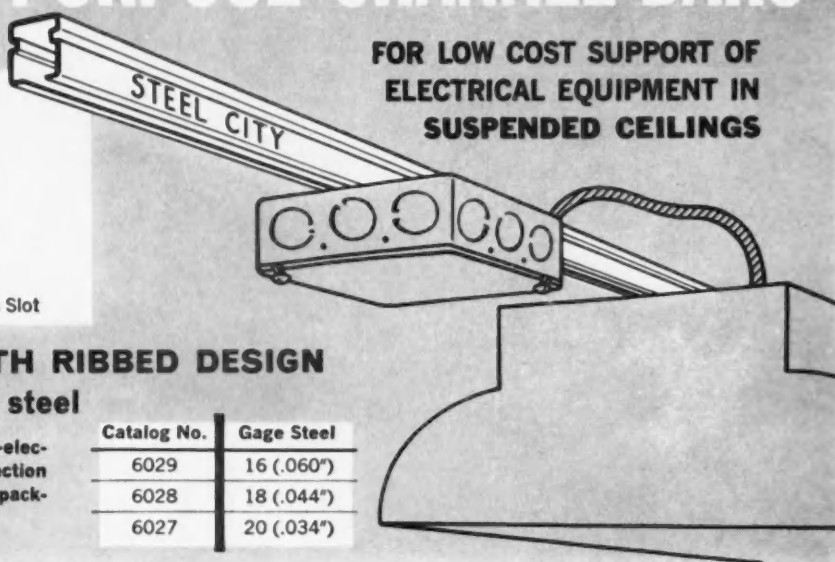
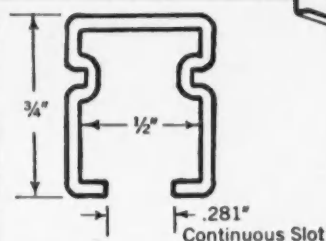
J-30340

Westinghouse



NEW ALL-PURPOSE CHANNEL BARS

**FOR LOW COST SUPPORT OF
ELECTRICAL EQUIPMENT IN
SUSPENDED CEILINGS**



EXTRA-STRENGTH RIBBED DESIGN Made in 3 gages of steel

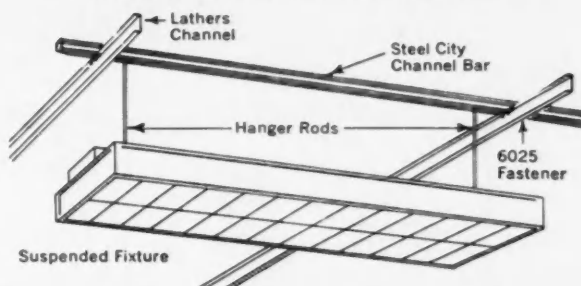
Extra bright Galv-Krom Finish—electro-galvanized, PLUS added protection of zinc chromate. 10 ft. lengths packaged 100 ft.

Catalog No.	Gage Steel
6029	16 (.060")
6028	18 (.044")
6027	20 (.034")

Simplifies locating and mounting of fixtures, conduits and boxes

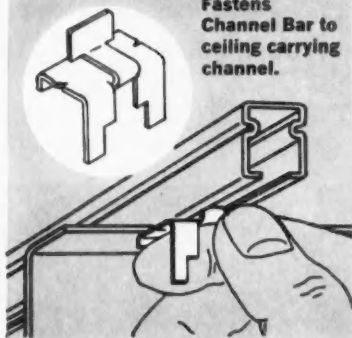
Here's a new series of Channel Bars to simplify the support of overhead fixtures, conduits and boxes in suspended ceiling construction. The handy Channel Bars, installed slot-side down, provide unlimited positioning of electrical equipment or continuous line of support for lighting fixture hangers. Channel Bars are fabricated from three separate gages of steel for a wide range of applications and minimum load-bearing deflection values. You'll like Channel Bar adaptability and low cost usefulness. Steel City Channel Bars are available now for your next suspended ceiling job. Bulletin 62-1 features load deflection charts.

For Surface or Suspended Luminaires

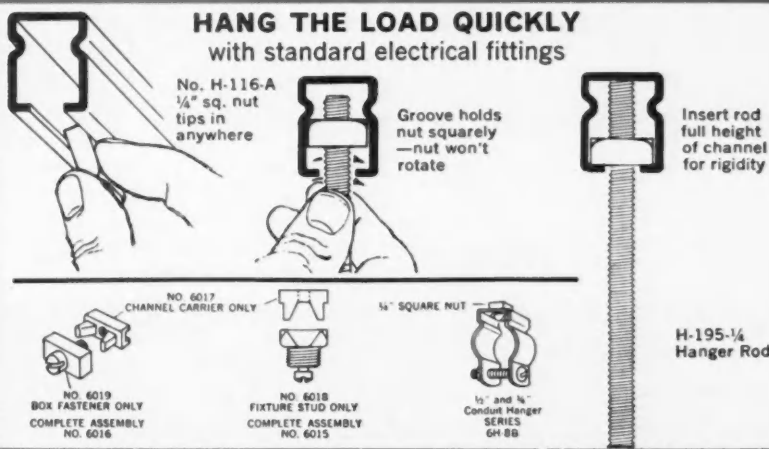


NEW CHANNEL BAR FASTENER

**No. 6025
Fastens
Channel Bar to
ceiling carrying
channel.**



HANG THE LOAD QUICKLY with standard electrical fittings



Write for Samples and Product Bulletin 62-1



Steel City
PITTSBURGH 33, PA.

STEEL CITY ELECTRIC CO. — A CONSTRUCTION MATERIALS DIVISION OF **MARTIN MARIETTA**

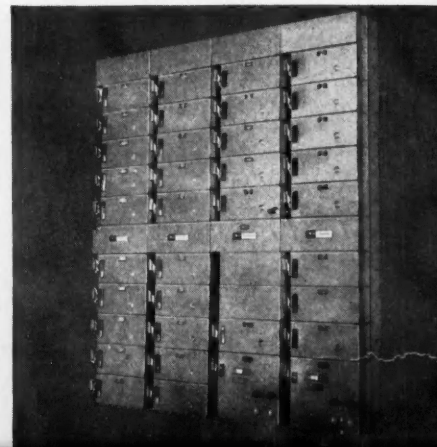
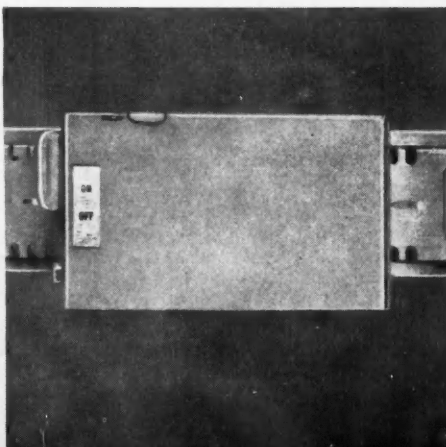
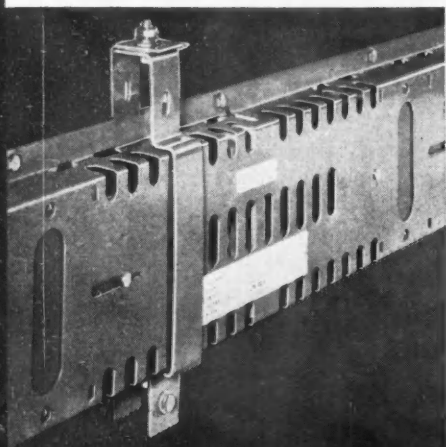


- 1 UNI-BUS DUCT**
Plug-in convenience... anywhere!
- 2 UNI-BUS PLUG-IN DEVICES**
Use anywhere; completely safe!
- 3 UNI-BUS PLUG-IN CENTERS**
Replace panelboards with plug-in convenience and safety!

1. HALF THE WEIGHT of most other ducts; selective low voltage drop; easier installation; easier maintenance... yet Uni-Bus costs no more! Family of six types for all industrial, commercial, laboratory and high rise building needs. Rated 100-4000 amps., 600 volts.

2. COMPLETE SAFETY, COMPLETE CONVENIENCE with Uni-Bus Plug-in devices which provide branch circuits at every 10 inches of Uni-Bus duct... or in stacks in the new Uni-Bus plug-in distribution centers. Patented interlocks make it impossible to touch a live part!

3. PLUG-IN POWER for distribution, motor control, and lighting panels is provided by new, flexible Uni-Bus Plug-in centers. Plug-in Trof design takes 30% less space; provides groupings of 2 to 10 locked plug-in outlets in 20 inch wide enclosures.





A new approach to in-plant power

Uni-Bus makes your entire distribution system a plug-in switchboard!

Get low voltage drop, easy installation, the ultimate in flexibility, safety and power availability... yet you pay no more!

Here's an entirely new kind of distribution system that provides all you need in accessible and flexible circuit protection right from the main disconnect to the ultimate use!

It's so safe you can't touch a live part anywhere in the system... so convenient you can plug in any place, any time... so lightweight and easy to assemble you can cut installation and maintenance time drastically.

That's not all! Better design gives better electrical performance... low voltage drop; no derating regardless of mounting plane.

Uni-Bus is so flexible you can revise it readily even if your plant layout changes every year. No obsolescence... duct, plug-ins and fittings are 100% reuseable.

Look at this list of Uni-Bus features. Don't you see a better answer to your power distribution problems?

Standard Components—Uni-Bus is a complete system featuring interchangeable parts all the way. Uni-Bus requires less than 1/4 of the accessories of ordinary busway.

No Specials—Off-the-shelf lengths mean you can tailor straight runs within 2 1/2". Exclusive

flexible connectors take care of special turns and offsets.

Low Impedance—Ratings are increased through use of multiple bars scientifically spaced... specially insulated aluminum and copper bus bars are supported and air spaced by durable polyester glass insulators in ventilated steel enclosures.

Easy to work on—Complete safety not only protects life but also means worry-free, quicker work with less downtime for maintenance or alterations.

A system that grows—Plug-in centers grow with your needs. Plug in another standard device... or add another standard plug-in trof. No need to wait while somebody assembles and wires a new panelboard.

Next time you build, remodel, or expand a plant get the busway system that gives you so much more. Choose Uni-Bus... the complete power distribution system with complete plug-in safety, convenience, and economy.

See your Cutler-Hammer distributor or representative today! Or write direct for Publ. LU-23-T241 on Uni-Bus duct systems and plug-in distribution centers.

WHAT'S NEW? ASK...

CUTLER-HAMMER

Cutler-Hammer, Inc., Milwaukee, Wisconsin • Divisions: ALL; Mullenbach • Subsidiaries: Uni-Bus, Inc., Cutler-Hammer International, C.A. • Associates: Cutler-Hammer, Canada, Ltd. Cutler-Hammer, Mexicana, S.A.



EXCLUSIVE...FROM JOHNS-MANVILLE!



Designed to work at low temperatures, J-M Dutch Brand® Cold Weather Tape handles easily...conforms readily!

Here is the tape-and-dispenser combination that gives top performance at regular or sub-zero temperatures. It is J-M Dutch Brand® No. 167-D Plastic Electrical Tape.

Flexible and workable both Summer and Winter, because Johns-Manville uses a new vinyl backing with special, all-weather properties.

Assures moisture-free splices, because Johns-Manville has developed a new adhesive that defies wet weather.

Sticks instantly, because this new adhesive

was specially formulated for use over a wide range of temperatures encountered by electricians.

Tears instantly at low temperatures, because this special cold-weather plastic electrical tape comes in J-M's unique "tape-and-tear" dispenser tool that stays sharp... has no moving parts

to break... protects tape against dirt and grease.

Try J-M Dutch Brand No. 167-D Cold-Weather Plastic Electrical Tape for yourself. Dutch Brand Division, Johns-Manville, Box 359, New York 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.



JOHNS-MANVILLE
DUTCH BRAND TAPE

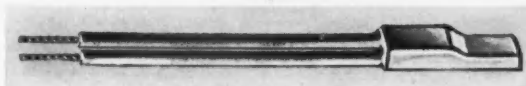


ADVAN-guard® is a thermally actuated automatic reclosing protective device sealed in the ballast housing. It is sensitive to voltage and current as well as temperature and protects against excessive voltage supply . . . internal ballast short circuiting . . . inadequate lamp maintenance . . . improper fixture application and eliminates the need for individual fixture fusing.

ADVAN-guard® is preset to trip out automatically whenever the Fluorescent Lamp Ballast operates at abnormal temperatures. When heat decreases to normal operating temperatures, ADVAN-guard® resets automatically and the ballast resumes normal operation. Through this continuous protection the full life of ADVAN-guard® Fluorescent Lamp Ballasts is realized. Only ADVAN-guard® ends premature destruction and unnecessary replacement labor costs.

AUTOMATIC RE-SETTING

ADVAN
THERMAL PROTECTION



ADVANCE OFFERS A CHOICE OF BALLAST PROTECTION



EQUIPPED WITH

NON-RESET

FUSE-LINK

THERMAL

PROTECTOR

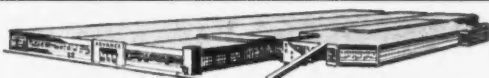
Advance FUSE-LINK is a temperature sensitive non-resetting protector built into the fluorescent lamp ballast. It is sensitive to heat and designed to open when the ballast is subjected to high temperature from any internal or external cause. The capacitor utilized in the FUSE-LINK ballast line also incorporates a thermal link which will open whenever the capacitor is subjected to abnormally high temperatures.

FUSE-LINK Fluorescent Lamp Ballasts protect against ballast leakage and end-of-life hazards. When a condition occurs that causes either or both links to open . . . the ballast is destroyed and must be replaced.

That's the protection story, ADVANCE offers a choice!

Your ADVANCE Sales Engineer will be happy to help you make that choice. Call him or write today.

"The Heart of the Lighting Industry"



ADVANCE®

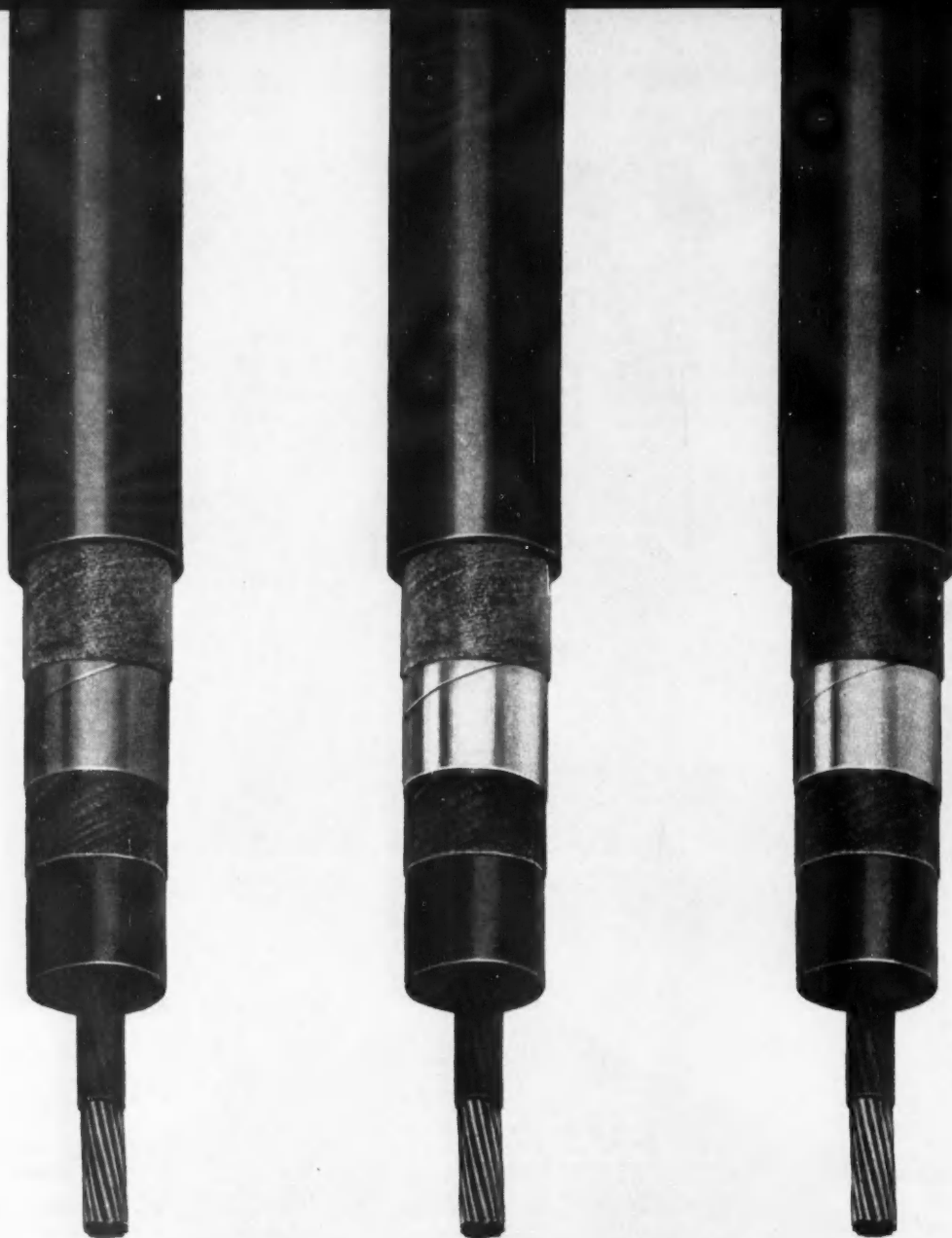


WORLD'S LARGEST EXCLUSIVE
MANUFACTURER OF
FLUORESCENT LAMP BALLASTS



TRANSFORMER CO.

2950 NO. WESTERN AVE. CHICAGO 18, ILL. U.S.A.



Which one is the Circle cable?

It's the one in the middle. But, don't feel too badly if you guessed wrong. To the naked eye there is no apparent difference. Most power cables look alike. The big difference in Circle cable lies in the extra care taken in its manufacture...in the high quality of the materials of construction...and particularly in the stringent tests it undergoes to assure that it meets every rigid specification.

You'll notice the difference in the service you get from Circle power cable. On your next job be sure to specify Circle cable—there is no finer cable made.



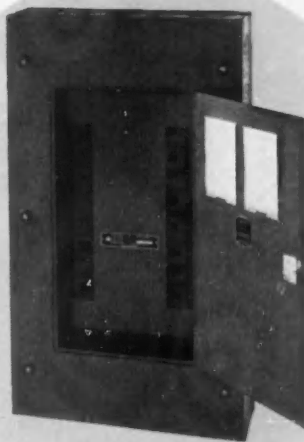
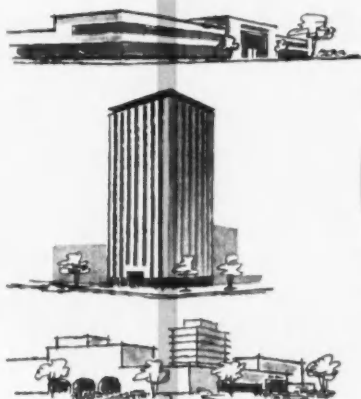
CIRCLE WIRE & CABLE CORP.

SUBSIDIARY OF CERRO CORPORATION

PLANTS: Maspeth and Hicksville, N. Y. SALES OFFICES & WAREHOUSES: In all principal cities.

Rubber Covered Wires & Cables • Varnished Cambric Cables • Plastic Insulated Cables • Neoprene Sheathed Cables • "CIRTUBE" EMT

**Not a boast...
but an acknowledgement of
the obligation of leadership**



SQUARE D SELLS MORE PANELBOARDS THAN ANY OTHER MANUFACTURER

• There are three reasons for Square D's predominance in the panelboard field...

First, the line is complete. Whether the requirement calls for AC or DC or both; lighting or power distribution or both; fusible or circuit breaker; plug-in or bolted construction; Square D has the right panelboard for practically any given job.

Even more important is the quality which

is built into every Square D panelboard—difficult to define but a very important combination of many details.

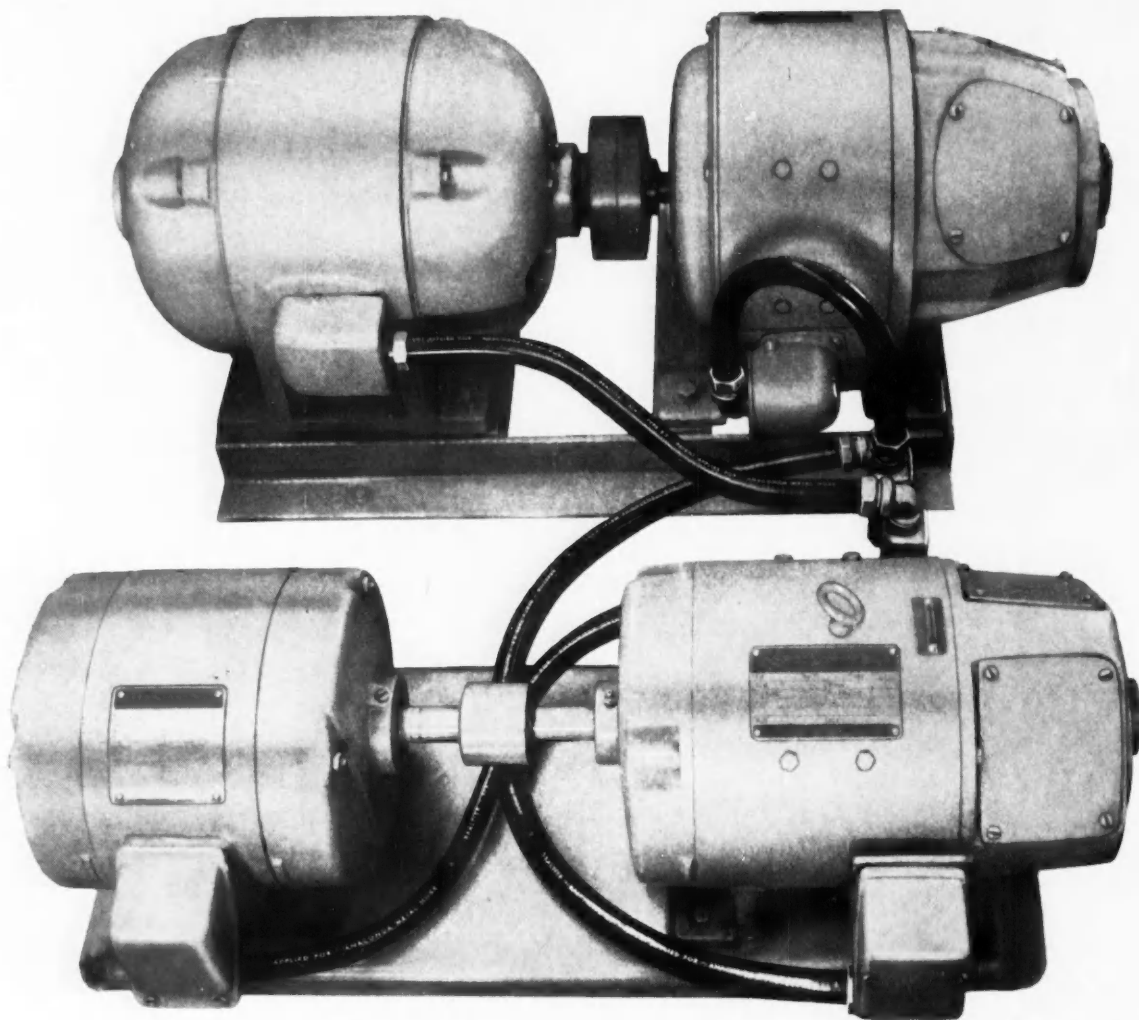
Availability is always an important factor—and here Square D rates especially high. Regional manufacturing and assembly facilities for "specials," combined with a national network of stocking distributors for standard panels, provide exceptional delivery and service.

write for Bulletin SD-126. It tells the quality story in detail
Square D Company, Mercer Road, Lexington, Kentucky



SQUARE D COMPANY

wherever electricity is distributed and controlled



why you should specify SEALTITE®

... the liquid-tight conduit that can take a tight turn

Why put up with the extra labor of bending and fitting rigid conduit? SEALTITE is easily installed . . . follows contours and connects outlets that do not line up.

Extremely durable, SEALTITE's tough polyvinyl chloride jacket over a flexible, galvanized steel core is unfazed by conditions that corrode ordinary conduit. Safety-seals all wiring against oil, grease, water, dirt, chemicals, corrosives, weather. Specify SEALTITE, the original . . . proved the best yet costs no more.

Get what you specify: The conduit you receive is Sealtite only when it's marked Sealtite and Anaconda on the cover. For Sealtite Bulletin S-544, write to: Anaconda Metal Hose Division, Anaconda American Brass Company, P.O. Box 791, Waterbury 20, Connecticut.

61-1911

SPECIFICATIONS

Trade Size (in.)	INSIDE DIAMETER		OUTSIDE DIAMETER		Approx. Inside Bend Diam. (inches)	Feet Per Std. Coil	Approx. Shipping Wgt. (Lbs.)		Feet Per Std. Reel	Approx. Shipping Wgt. (Lbs.)	
	Min.	Max.	Min.	Max.			Per Std. Coil	Per Std. Reel		Per Std. Reel	Per Std. Reel
TYPE UA	1/8	.484	.504	.690	.710	6	200	60	1500	460	
	1/2	.622	.642	.820	.840	7	200	70	1000	365	
	3/4	.820	.840	1.030	1.050	10	150	70	850	420	
	1	1.041	1.066	1.290	1.315	13	100	90	600	525	
	1 1/4	1.380	1.410	1.630	1.660	16	50	70	375	430	
TYPE EF	1/8	.485	.505	.690	.710	4	250	60	1500	390	
	1/2	.620	.640	.820	.840	5	200	60	1000	325	
	3/4	.815	.835	1.030	1.050	6	175	70	850	375	
	1	1.030	1.055	1.290	1.315	8	100	60	600	420	
	1 1/4	1.370	1.395	1.635	1.660	9	100	80	375	360	
	1 1/2	1.575	1.600	1.875	1.900	11	50	55			
	2	2.020	2.045	2.350	2.375	14	50	75			
	2 1/2	2.480	2.505	2.850	2.875	19	50	105			
	3	3.070	3.100	3.470	3.500	23	25	80			
	4	4.000	4.040	4.460	4.500	28	25	105			

ANACONDA®
METAL HOSE DIVISION

7 WAYS BETTER!

- 1 Adhesive permanently fused for lifetime splices
- 2 Conforms perfectly for perfect splicing
- 3 Controlled stretch — no dangerous thinning
- 4 Built-in "grab" — snugs and stays down
- 5 The choice of experienced electricians
- 6 Unvarying top quality in every roll
- 7 Exclusive FLIP-n-CUT® dispenser-cutter — FREE!



FLIP 'N CUT®, a Slipknot exclusive, speeds the job and saves you money. It's FREE with each 30' - 44' - 66' roll!



No. 7 SLIPKNOT

PLASTIC ELECTRICAL TAPE



PLYMOUTH RUBBER COMPANY, INC.

QUALITY SINCE 1896

CANTON, MASSACHUSETTS

Makers of SLIPKNOT FRICTION TAPE — most widely used in the world

ELECTRICAL CONSTRUCTION AND MAINTENANCE . . . SEPTEMBER, 1962



Leave competition behind with Dodge Reports

Here's a tip for electrical contractors who want to get ahead in the scramble for new construction business. Dodge Reports can give you *advance* news—every day—on practically every new project you'd like to have. You concentrate your new-business efforts on jobs that look best to you—leave the rest to competitors who don't have this advantage.

It's easy—you tell Dodge just the type, size and location of jobs you'd be interested in; and that's just what Dodge sends you.

Dodge Reports give you a running start on the

profitable jobs you want. To get the full details, return this coupon today.

ELECTRICAL CONTRACTORS!—WRITE FOR FREE BOOK

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Construction News & Statistics Div.,
119 W. 40th St., New York 18, N. Y.

I'd like to receive your free booklet,
"How Subcontractors Get More Work
in New Construction" and details on
how Dodge Reports can help me
increase volume and profits.



Name

Company Title

Address

City Zone State

ECM92



DODGE
reports



ROYAL

**FIRST WITH THE MEN
WHO USE THE MOST**

ROYAL
ELECTRIC **ITT**
... an associate of

WIRE • CABLE • CORD SETS • FUSES • WIRING DEVICES

... because no other source of flexible and portable cord and cable makes the right construction so easy to get. For, the Royal family of quality products is reliably made, responsibly distributed, realistically priced, readily available.

ROYAL ELECTRIC CORPORATION, PAWTUCKET, RHODE ISLAND

**MATCH THE
STARTER
TO THE JOB**

5 out of ten Motor Applications (10 to 75 hp) are Satisfied by Furnas Exclusive Sizes $1\frac{3}{4}$, $2\frac{1}{2}$ and new $3\frac{1}{2}$

Now you can match the starter to your exact horsepower requirement, eliminating wasted space and capacity (and cost). Only Furnas offers a really complete line of motor starters through Size 4. Our exclusive Sizes $1\frac{3}{4}$, $2\frac{1}{2}$ and new $3\frac{1}{2}$, all standard with Furnas, meet the horsepower/motor ratings between 10 and 75 hp that are not covered by the usual size starters. You'll find that Furnas horsepower rated starters do the job better, more economically.

Write today for full information—Bulletin 14-B5.

FURNAS ELECTRIC COMPANY

Sales Representatives in All Principal Cities



Write today for full information
1067 MCKEE STREET, BATAVIA, ILLINOIS

A136

WIREMOLD® ELECTRIC IDEAS

PREPARED EACH MONTH FOR ELECTRICAL CONSTRUCTION AND MAINTENANCE
TO BRING IDEAS, NEWS AND HELPFUL INFORMATION TO ELECTRICAL MEN

63rd YEAR

SEPTEMBER, 1962

NEW WIRING IN OLD HOUSE _____ FIRST PAGE

CODE COMMENTS _____ FIRST PAGE

EDITORIAL _____ SECOND PAGE

PRODUCT OF THE MONTH _____ SECOND PAGE

QUIZ CORNER _____ SECOND PAGE

COUPON FOR FREE ITEMS _____ SECOND PAGE

ENGINEERED SPECIALS _____ FOURTH PAGE

NOTEWORTHY _____ FOURTH PAGE

PRACTICAL TIPS _____ FOURTH PAGE



DRAMATIC MODERNIZATION of old home began with installation of new wiring and multi-outlet systems. Above, kitchen before and after.

New Wiring Puts New Life Into Old 2-Family House

Rewiring and multi-outlet systems update home,
permit flexibility of furniture placement

When a young couple buys a home — even one that's older than they — it can be expected that they will want to enjoy modern living in it.

With that thought in mind, the Wallace Seidons gave first consideration to rewiring their two-family, three-story home. Adequate wiring and plenty of conveniently

located receptacles, they felt, would give them the opportunity to use the many portable electrical appliances they owned. At the same time, it would enable them to have the utmost flexibility in furniture placement.

Because the Seidons were to live on the second floor (the first floor

continued on third page

Code Comments

Receptacles in Kitchens

Q. What are some of the specific requirements for receptacles in kitchens in dwelling occupancies?

A. Paragraph 210-22(b) of the Code specifies that "Where an outlet is installed in the kitchen at the sink location this outlet shall be of the grounding type."

Paragraph 220-3(b) states that "For the small appliance load in kitchen, laundry, pantry, dining-room and breakfast-room of dwelling occupancies, two or more 20 ampere branch circuits in addition to the branch circuits specified in Paragraph 220-3(a) shall be provided for all receptacle outlets (other than outlets for clocks) in these rooms, and such circuits shall have no other outlets."

Grounding Portable Equipment

Q. When should portable equipment be grounded in other than residential occupancies?

A. The NEC, in Section 250-45, states: "under any of the following conditions, exposed non-current-carrying metal parts of portable equipment shall be grounded:

"(d) In other than residential occupancies, (1) portable appliances used in damp or wet locations, or by persons standing on the ground or on metal floors or working inside of metal tanks or boilers, and (2) portable tools which are likely to be used in wet and conductive locations shall be grounded except where supplied through an insulating transformer with ungrounded secondary of not over 50 volts."

WIREMOLD®

Editorial

The old and the new

It is notable that Robert Martin Engelbrecht, architect of The American Home of the Immediate Future at the Seattle World's Fair, chose Plugmold to "create continuous outlets along the walls."

While Mr. Engelbrecht, who believes "electricity is a fundamental tool of design . . .," was specifying surface systems for a home of the future, another person was using it as part of the modernization of an older home.

Our feature story describes the use of Plugmold in the transformation of an older home to provide modern living convenience.

Doesn't this confirm what we've long maintained: Plugmold is the wiring system for electrical convenience for today and tomorrow.

Product of the Month

Speed, appearance improved with internal corner couplings

Designed to speed installation by eliminating the need to fasten an elbow to the surface, 2017TC Internal Corner Coupling simply slides into the raceway base.

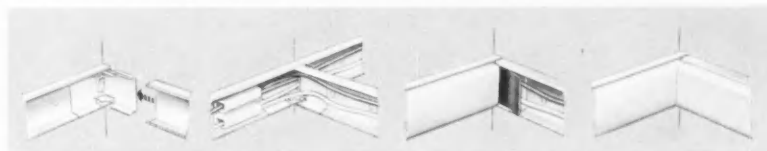
The raceway base is run right up to the corner with the 2017TC slipped into place. The adjoining raceway base is slipped onto the other end of the coupling and mounted to surface. The raceway cover becomes the cover of the fitting as well, making for a neat corner.

Economics, too, come into play. The 2017TC coupling is less ex-

pensive to buy and, because of the time and labor saved, more economical to install than the elbow.

In addition to its use as an internal corner coupling, the 2017TC also can be used as a combination corner coupling and straight-through fitting. This permits going through a partition at the same time, and with the same fitting, as the partition corner is turned and the wall wired.

The 17TC couplings are available also in the 2100, 2200 and 3000 series.



Quiz Corner

Questions for this department are taken from inquiries received from the field. Your questions are welcome; indeed, they are necessary if this department is to serve you with worthwhile information. Address:

Quiz Corner
The Wiremold Company
Hartford 10, Conn.

Q. Is Plugmold available in buff or gray finish with ivory outlets?

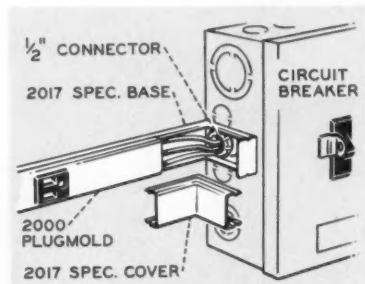
A. The Snapicoil® series are available in buff or gray finish with black or ivory outlets. Ivory outlets in wired sections are available on special order, with base and cover in buff or gray. Specify "V" at end of catalog number for ivory outlets.

Q. Is there a fitting for connection of 1/2" pipe to Wiremold 200?

A. No, at present there is no single fitting to connect 1/2" pipe to Wiremold 200. However, this can be accomplished by using a

5782 conduit connector or 5784 elbow conduit connector and a 289 reducing connector.

Q. What would your suggestion be for installing a circuit breaker at the end of a strip of Plugmold 2000?



A. Through the use of a 2017 Special elbow.

Q. Is there a blank end fitting to fit 2600 overfloor duct, to terminate a run of 2600 in the middle of a room?

A. No, use the 2642D junction box.

Q. How can I make an irregular turn with one-piece Wiremold?

A. Use flexible section 200F, 5700F, or 1000F.

Q. Is there a grounding receptacle for use with Wiremold 200?

A. Yes, 57243G.

WIREMOLD®

WIREMOLD ■ HARTFORD 10, CONN.

E2-9

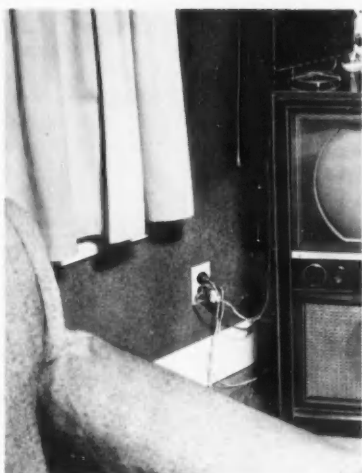
Gentlemen: Please send free the checked items

NAME ☐ Electric Ideas, August, 1962

COMPANY ☐ Electric Ideas, July, 1962

ADDRESS ☐ Wiring Guide (Catalog 22)

New Wiring Puts New Life continued from first page



HAZARDS like this were common when one circuit serviced entire apartment.



AS NEW-LOOKING as the baby that occupies the nursery, this room is now serviced by two circuits and has plenty of receptacles for the many electrical items needed.

was occupied at the time of purchase), they turned their attention first to that area, although some modernization was done to the other apartment.

Prior to remodeling, the service to the house was 120-v., 60-amp., breaking 30-amp. to each of two meters. The two apartments, each consisting of four rooms, had a single circuit per apartment.

The new service consisting of 240-v., 200-amp. was brought in. It was split so that each apartment had 100-amp. service.

For the first floor, the original circuit was split to a total of four effective circuits and one spare circuit for the attic. This reduced the load carried by the original circuit and made it possible for the tenants to use many electrical conveniences

which had not been possible before. Major remodeling was left for a future date.

The spare circuit for the attic is intended for whatever future use may be decided.

Because the Seidons wished to make as few structural changes as possible in their apartment, they decided on a perimeter layout of Plugmold 2200 with alternately wired, grounding receptacles 30-in. on centers for the two bedrooms and living room.

An area above the baseboard was cut away for the feed wires (No. 12 armored cable) and for the new heating system. (The apartment had been heated by a kerosene burner in the living room and by a combination coal and gas stove in the kitchen.)

Once the feed wires were in, $\frac{3}{8}$ -in. sheet rock was used to cover the old wood lath and plaster walls. The Plugmold® 2200 was then run above the old wood baseboard in every room but the kitchen and Plugmold 2000 placed in position in that room.

Here, two types of wired sections were used: six-foot sections with grounding outlets 12-in. on centers, and 5-ft. lengths with grounding outlets 9-in. on centers. Two Wiremold 20FL units were placed under each bank of cabinets for fluorescent lighting of the counters beneath.

When completed, wiring in the second floor was divided in the following manner:

The original circuit carries kitchen ceiling light (switched), bathroom ceiling light and medicine cabinet light, alternated receptacles (hot 22GA30) in the two bedrooms and one half of the alternated receptacles (22GA30) in the living room, and the front and rear hall lights (total of two lights).

The new circuits carry a 240-v., 50-amp. circuit for kitchen range, three 120-v., 20-amp. circuits for the kitchen, one 120-v., 15-amp. (switched 22GA30) in the master bedroom, one 120-v., 15-amp. (switched 22GA30) in the nursery, and two 120-v., 15-amp. spare circuits in the attic.



AFTER NEW feed wires were brought in, Plugmold 22GA30 was installed along perimeter of rooms. The original single circuit was used to feed some of the alternated outlets.

Engineered Specials

Fitting developed for feeding 2100 from side of 3000

PROBLEM:

To provide a method of feeding Wiremold 2100 from the side of a run of Wiremold 3000 so that conductors could be installed without having to be threaded through a connector fitting.

SOLUTION:

The ED-30974 was developed by Wiremold engineers to permit feeding the 2100 raceway without the use of a box or other external fitting.

DISCUSSION:

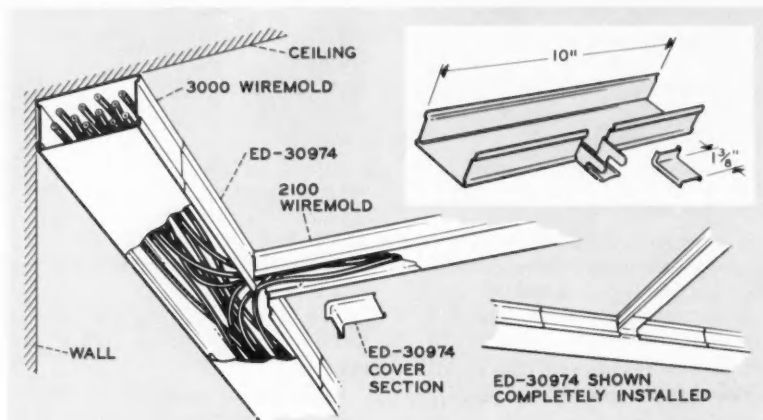
For illuminating a store, it was decided to use a 3000 feeder system, then taking off from it with 2100 to power the lighting fixtures.

The fixtures were to be mounted tightly against the 2100. For the sake of appearance, it was important that the feeding of the 2100 be done as neatly as possible.

The side of the 3000 base was notched to the width of the 2100 at required intervals. A coupling was welded in place to form a modified 3015 tee.

The base of the 2100 raceway was then attached to the leg of the tee, providing a simple, neat method of feeding the smaller raceway.

After the wires were installed, a Special 2117TC Cover was snapped into place so that one leg formed part of the raceway cover and the other leg filled the gap in the side of the 3000 caused by the difference in depth between the raceways. Standard 2100 and 3000 cover sections were used to complete the run.



Noteworthy

Personnel at Meetings

Robert T. Bennett, Boston, and Henning A. Thomsen, Home Office, will represent Wiremold at the Eastern Section, IAEI meeting at the Mount Washington Hotel, Bretton Woods, N.H., Sept. 10-12 while John D. Murphy, president, and William E. Parks, sales manager, electrical division, will attend the Western Regional Convention of NAED at the Empress Hotel, Victoria, B. C., Sept. 16-19.



Bob Bennett Henning Thomsen John Murphy Bill Parks

Practical Tips

Fittings designed for in-field requirements

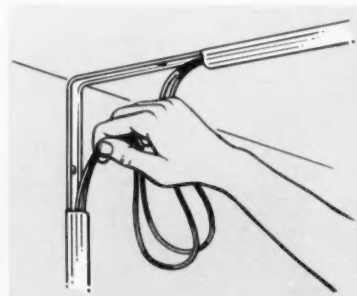
Tools and fittings for Wiremold one-piece raceway are designed for maximum efficiency and ease of installation. There is a fitting for every need; yet a minimum number handles most requirements, with virtually every fitting acting as a pull box.

Many Wiremold fittings were developed in cooperation with contractors to solve real field problems, thereby adding to the practicality and economy of the system.

All fittings are quickly and easily connected to the raceway by the slip-joint method. Each length of raceway comes with a coupling that mechanically aligns lengths; insures electrical continuity of ground; and

acts as a means of fastening and support.

Wiremold one-piece raceways are a complete system, completely interconnectable with each other or other systems.



WIREMOLD®

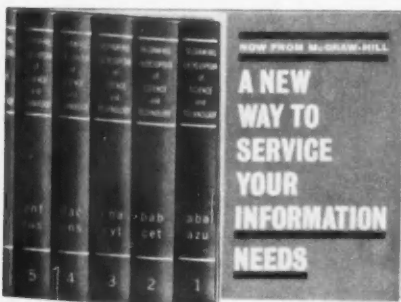
HARTFORD 10, CONNECTICUT

In Canada: Conduits National Co., Ltd.
Toronto 2, Ontario

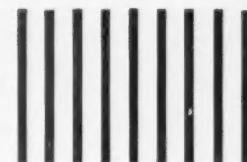
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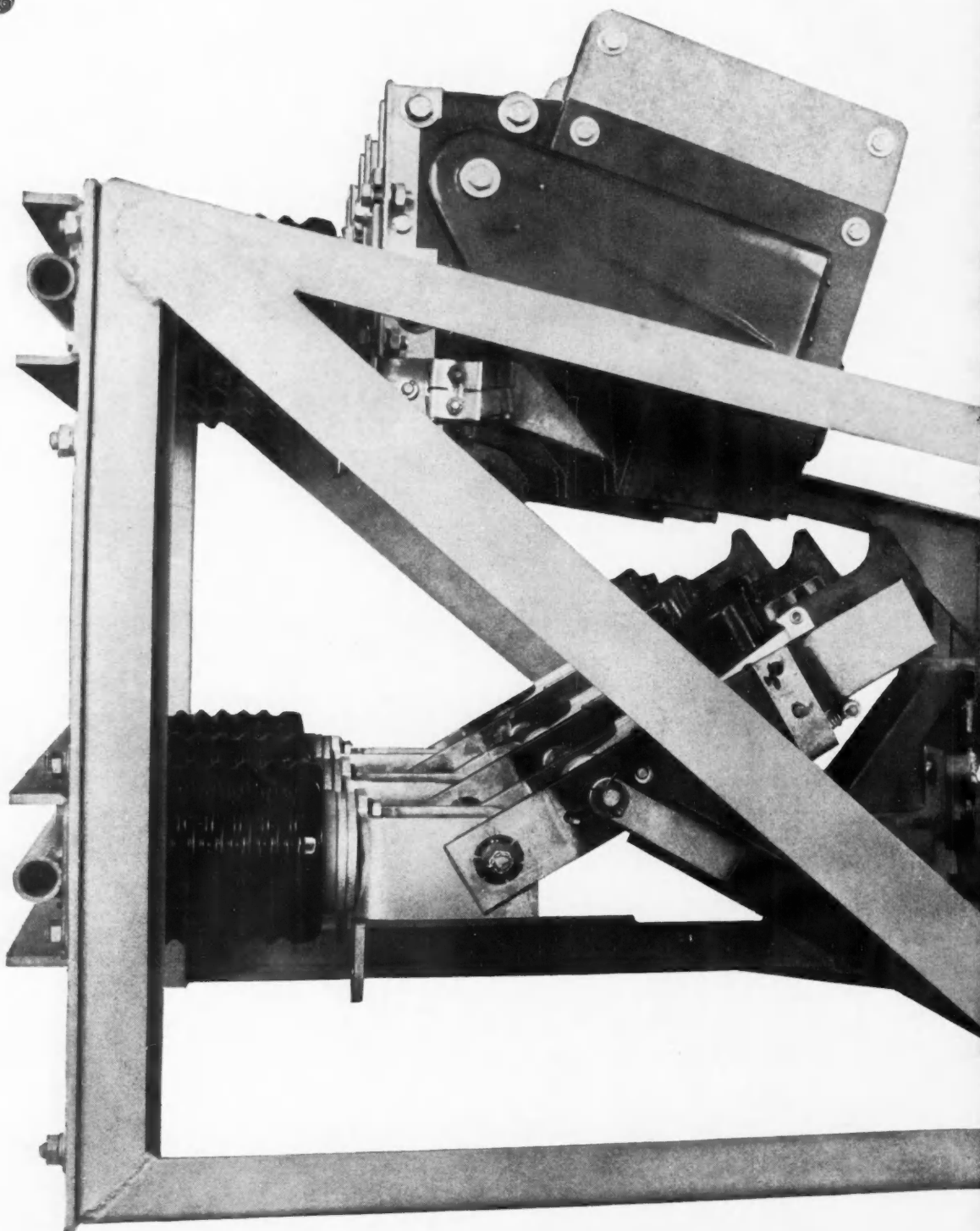
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to keep up with the explosive
pace of developments today, you
will see a valuable solution at
the top of this page.**





Low-cost Protection

General Electric stationary switch and fuse equipment is designed to fully meet your light-duty switching and fault-current protection needs. G-E switch and fuse equipment gives you quality where it counts.

Non-expendable arc chutes are made of the same high quality phospho-asbestos compound as the chutes in G-E magne blast power circuit breakers. Manufactured to extremely fine tolerances, these chutes have high performance characteristics and long life.

Current-limiting fuses are on the source side of the load-break switch to provide better protection. Fuses limit short-circuit currents to values far below harmful levels in $\frac{1}{2}$ cycle or less to prevent damage to protected equipment. And interruption is clean—since there's no discharge when fuses interrupt and no dangerous gas build-up.

Stored energy switching provides consistent, positive make and break to lengthen contact life, reduce maintenance, and provide greater safety.

It makes good sense to install reliable, low-cost switch and fuse equipment when the benefits of metal-clad switchgear's higher ratings, repetitive interrupting capabilities, sensitivity to single-phasing and ground-fault currents, are not required.

Examine your system. If fused overcurrent protection is justified, and switching requirements do not exceed 13.8 kv, look into the economies of General Electric stationary switch and fuse equipment.

In addition to stationary switch and fuse or rollout switch and fuse, G.E. offers a full range of voltages and capacities in the metal-clad switchgear line.

For more information, talk to your General Electric sales engineer, or write for bulletin GEA-7718. Sect. 514-01, General Electric, Schenectady 5, N.Y.



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Sylvania's New **Power-V** Series

makes your
Lighting Installation
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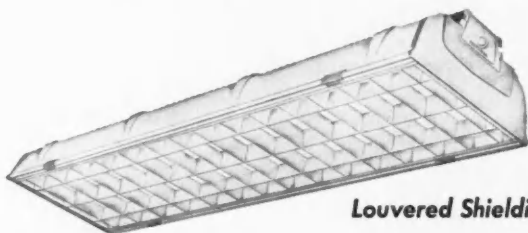


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This, plus the built-in features of ruggedness, neatness, power, versatility and simplicity, make Sylvania Power-V the outstanding line of industrial fixtures available.

Ask your Sylvania representative or your Sylvania Select Distributor for details. Or write to:

SYLVANIA LIGHTING PRODUCTS
A Division of SYLVANIA ELECTRIC PRODUCTS INC.
One 48th Street, Wheeling, West Virginia



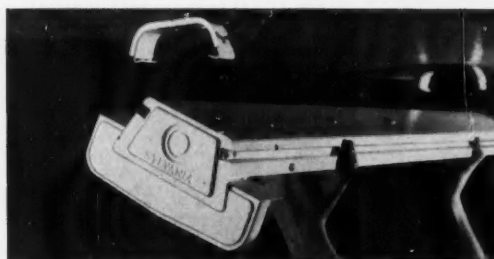
Louvered Shielding

A variety of louvered, lens and panel shieldings can be used with Sylvania's Power-V Series. The door frame (which can swing down from either side) holds the shielding firmly in position to withstand sudden jars or shocks.

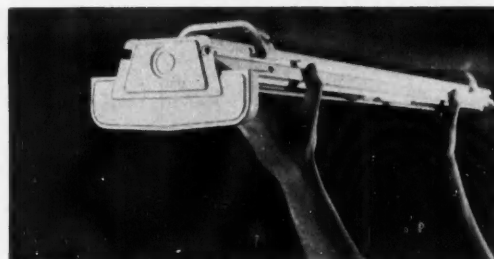
The Power-V with 800 ma HO or 1500 ma lamps and 30° x 30° metal cell louver shielding is gaining popularity for the general illumination of areas where more critical visual tasks are performed.

New GRAVITY-LOK Hanger

This new Sylvania hanging device makes the installation of Power-V fixtures as simple as 1-2-3. Ask for a demonstration in your own office.



After Gravity-Lok Hanger is fastened or suspended, engage groove of one side of fixture channel into lip of stationary side of Gravity-Lok Hanger.



Rotate fixture into position. Movable clamp of Gravity-Lok Hanger moves aside as channel is pushed upward. Clamp then falls into groove on channel holding it in place. Then tighten screw on side of Gravity-Lok Hanger to prevent lengthwise movement of channel, when desirable.

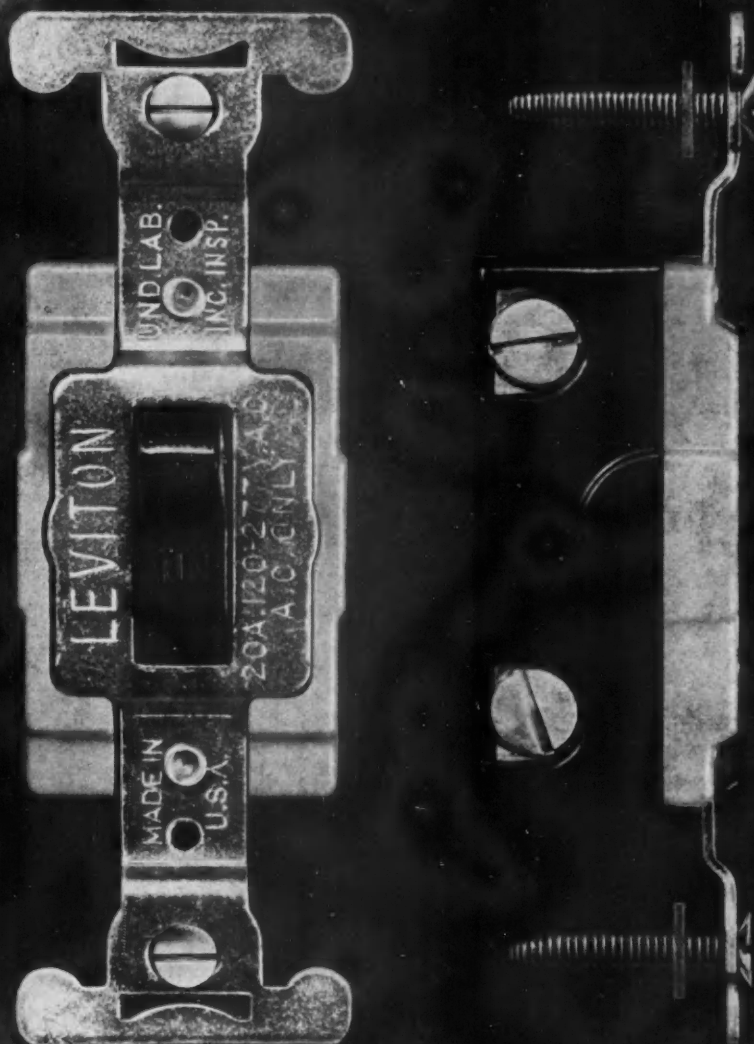
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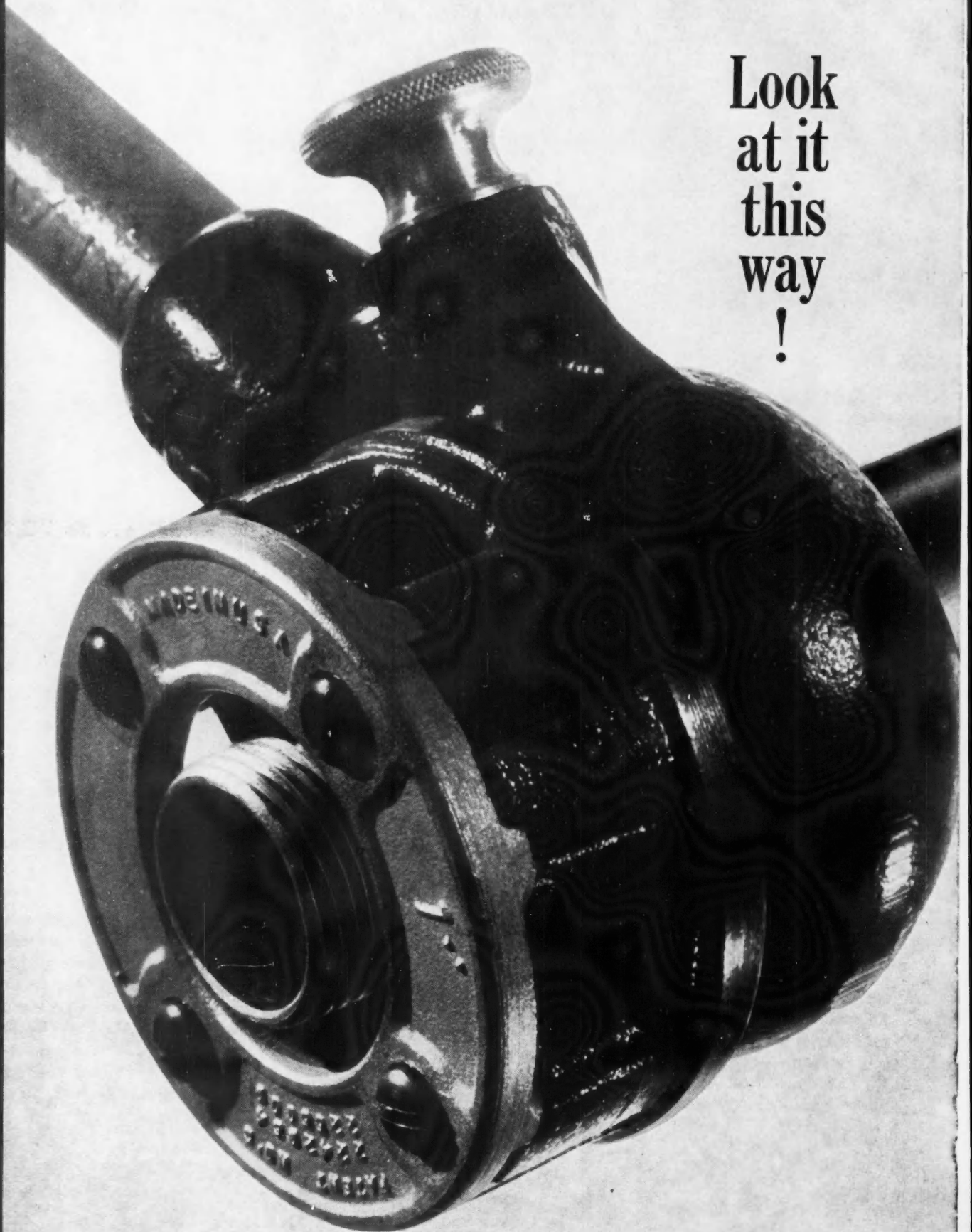
This switch has been turned on and off over three million times! Still working—still quiet—it is dramatic proof of the reliability Leviton builds into every one of its switches. ☐ Few switches will ever be operated as often in actual use. The fact that ours can — and does — is your assurance of uncompromised quality and dependability. Testing of a Leviton device calls for the equivalent of twenty years of heavy usage under four types of loads, and seventeen tests to check reliability. Only after our products have exceeded these requirements are they permitted to meet yours. ☐ Whether it's "Specification: Quiet," or any other specification, chances are there's an economical, dependable Leviton device to meet it. Over twenty different Quiet Switches! Over 2,000 standard wiring devices! You'll find them all in our new 1962 catalog. Write for your copy today. Dept. EC-3, Leviton Manufacturing Company, Inc., Brooklyn 22, New York.



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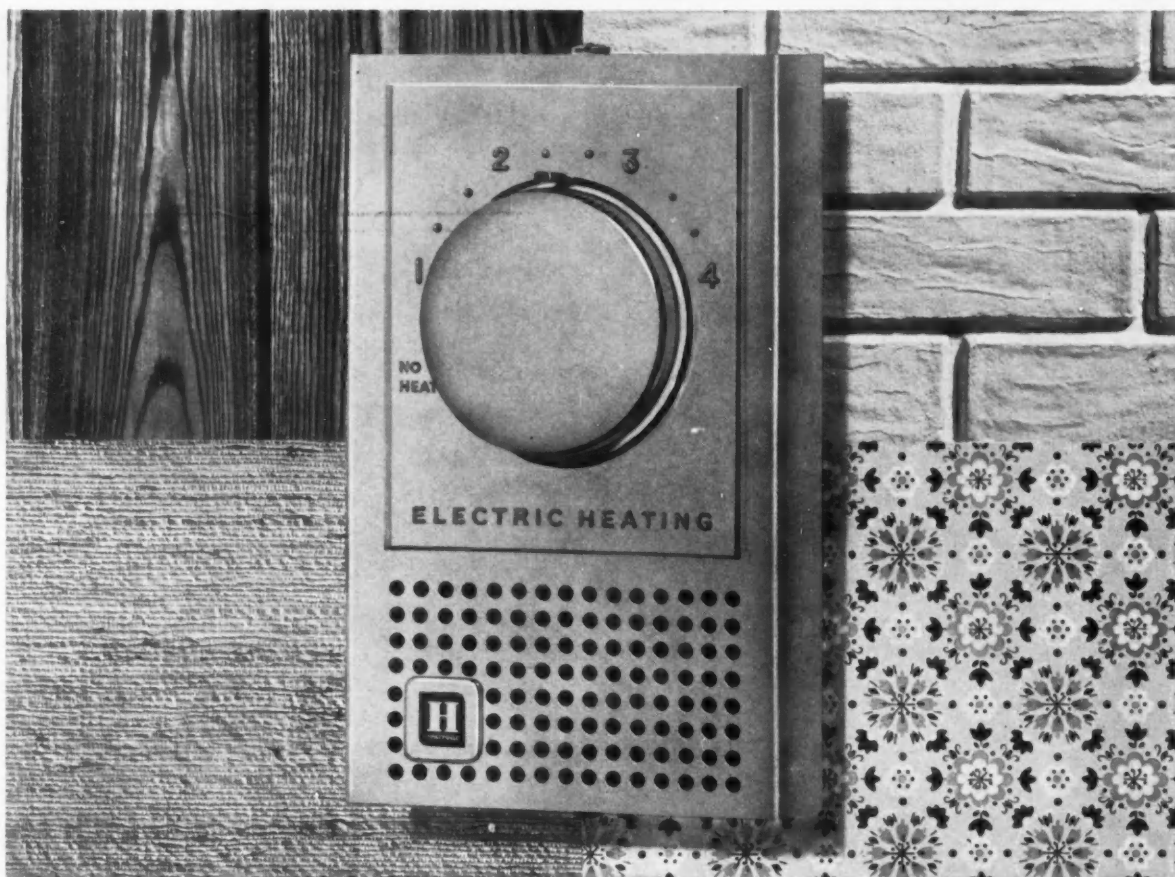


No other type of conduit is so easy to thread, costs so little to install

It stands to reason: with a sharp regular die, Alcoa *aluminum* electrical rigid conduit is much easier to thread. And that's only one of the ways aluminum conduit saves time and money in installation. It's much easier to cut, too. Easier to bend. Easier to carry and position, because it's so much lighter. □ Alcoa aluminum rigid conduit is priced competitively. It is naturally corrosion-resistant: needs no painting or other protection. It's non-magnetic. Non-sparking. And it has a smooth, specially-lubricated interior that makes cable-pulling go a little faster. □ In short, Alcoa aluminum electrical rigid conduit makes a better installation at lower cost. Find out for yourself: ask your Alcoa-Rome representative or distributor for the facts and figures. Or write to Rome Cable Division of Alcoa, Department E2, Rome, New York.

CONFORMS TO ASA C80.5-1960—RIGID ALUMINUM CONDUIT AND FEDERAL SPECIFICATION WW-C-540A





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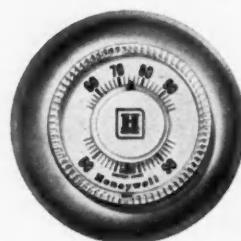
Get the facts about Honeywell. Just call the nearest Honeywell office or write: Honeywell, Dept. EC9-25, Minneapolis 8, Minnesota.

Two switching variations available: T462A and T460C are SPST, make on temperature fall, break line in NO HEAT position. T462B and T460D have the added feature of breaking both lines in the OFF position.

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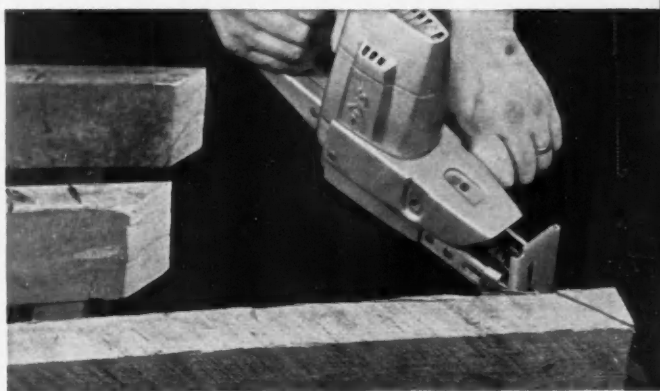
FIRST ALL-PURPOSE SAW PRICED UNDER \$50!



...and look at the jobs the new Skil Recipro Saw does!



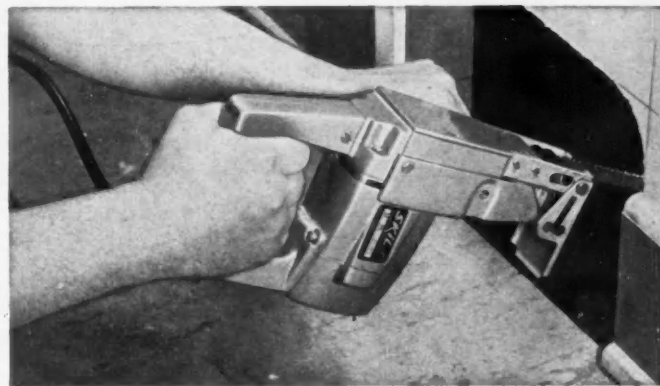
Cuts metal—including pipe, conduit, tubing, angle, sheet metal, bar stock, aluminum, soil pipe and more.



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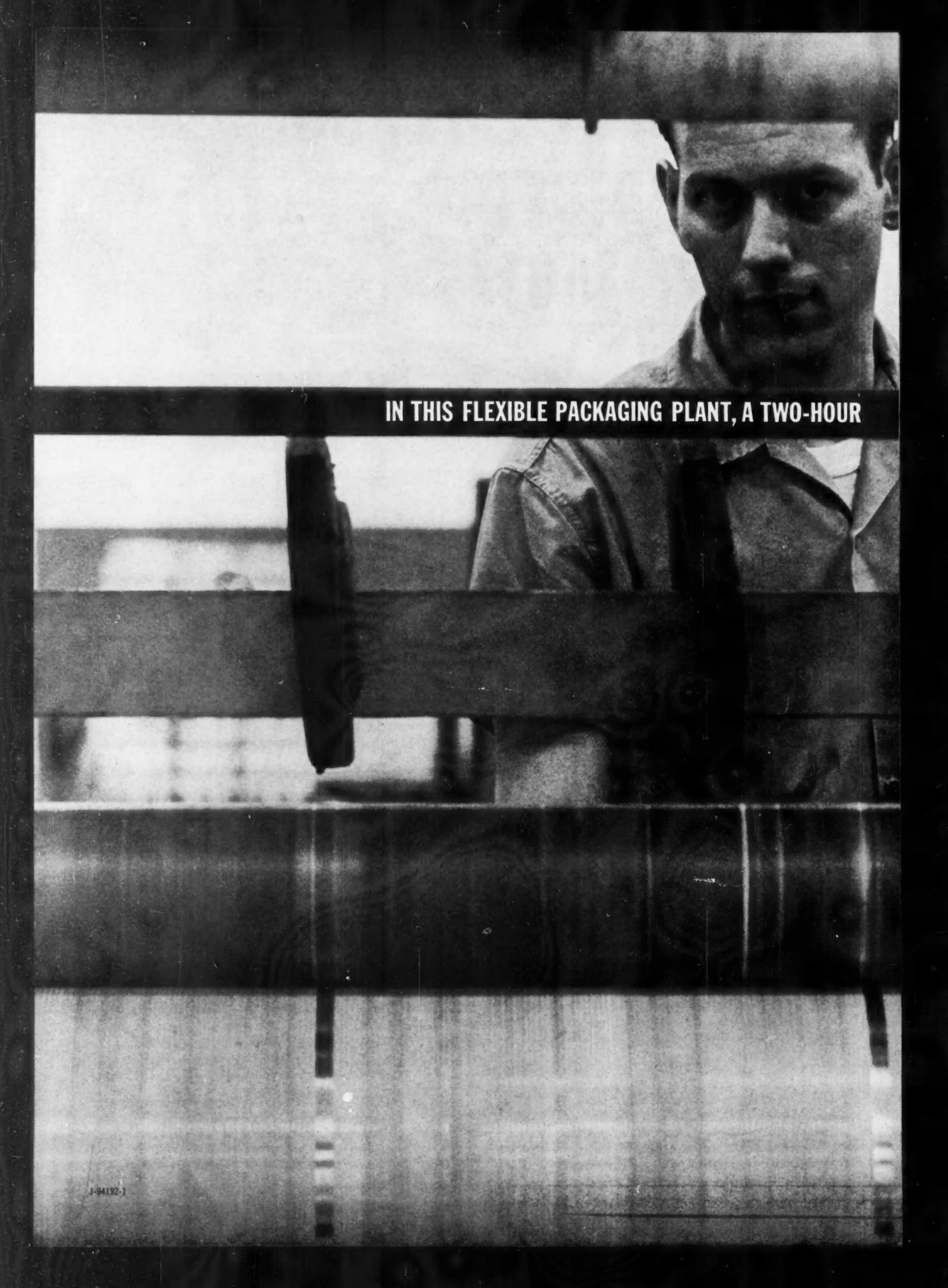
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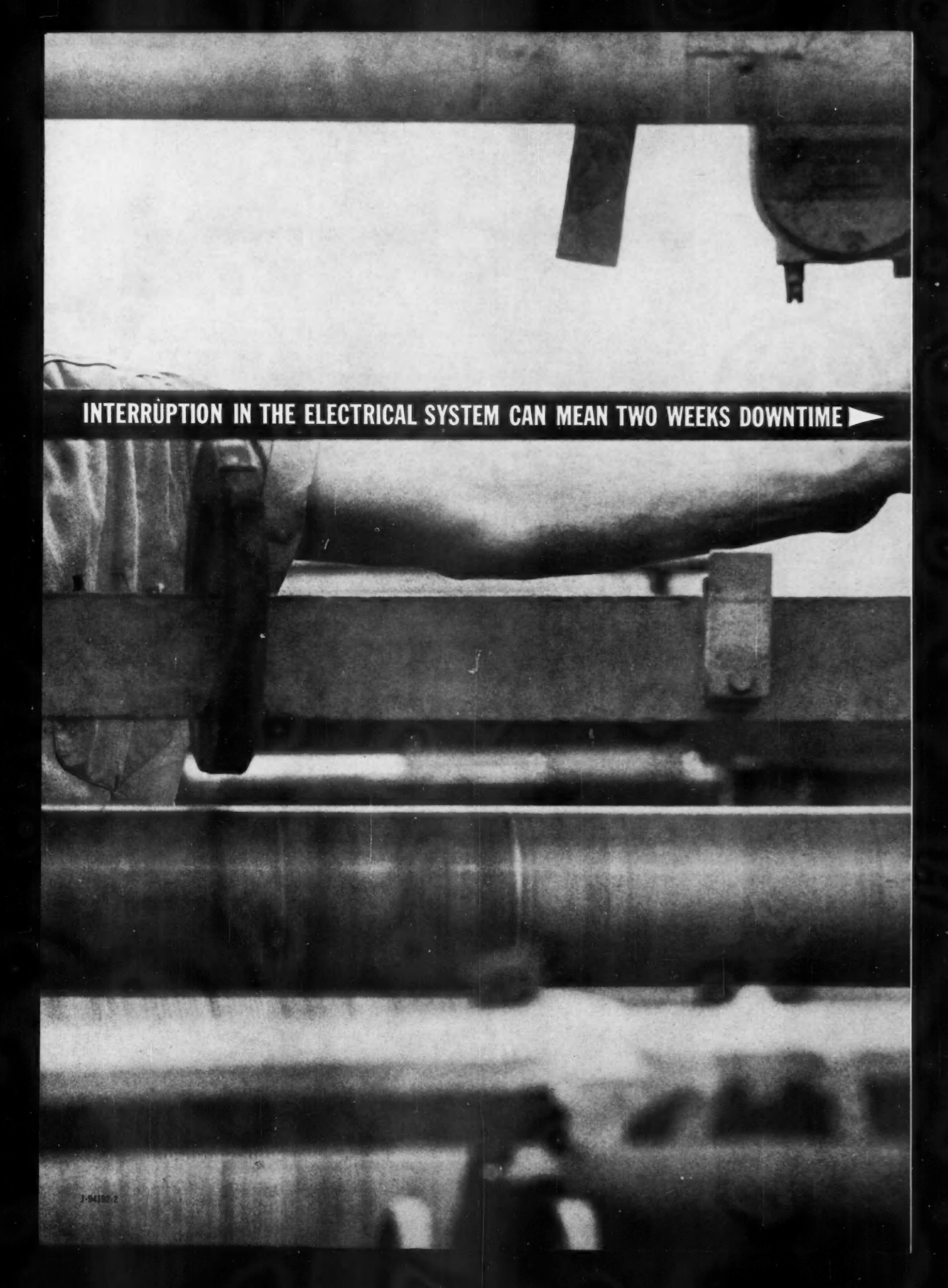
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SKIL
POWER TOOLS

A black and white photograph of a man in a factory setting. The man is looking through a metal grate, which is partially visible in the foreground. He is wearing a light-colored shirt. The background is a bright, overexposed area, possibly a window or a large light source. The overall tone is industrial and gritty.

IN THIS FLEXIBLE PACKAGING PLANT, A TWO-HOUR



INTERRUPTION IN THE ELECTRICAL SYSTEM CAN MEAN TWO WEEKS DOWNTIME ►


SO CROWN-ZELLERBACH MADE SURE ELECTRICAL COMPONENTS WERE WESTINGHOUSE

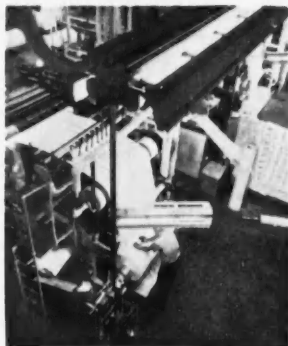
In St. Louis, Mo., Crown-Zellerbach Corporation recently constructed a new 220,000-sq. ft. plant for their Western Waxide Division, producers of flexible packaging materials including wax paper labels and wrappers. In a month's time, hundreds of thousands of pounds of liquid wax is processed through the plant. If a power failure were to occur for just two hours, and wax in various pipelines solidified, a two week layoff would be necessary to get back to full production. Components in the electrical system are therefore confronted with a very heavy responsibility.


It is in requirements like this where Westinghouse electrical equipment and engineering know-how works to best advantage. To minimize maintenance no fuses are used in the plant's electrical system. Previous experience with Westinghouse led to customer specification for this completely air-conditioned plant. Westinghouse quality equipment, local distributor stockpiling, and sales follow-through led to a coordinated construction schedule. All important reasons why, *You can be sure . . . if it's Westinghouse.*

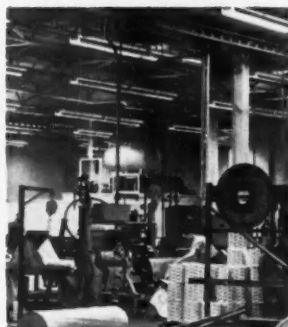
CREDITS: Owner: Crown-Zellerbach Corporation, San Francisco, Calif. Architect and Engineer: Albert C. Martin and Associates, Los Angeles, Calif. Electrical Contractor: John Ledbetter Electric Co., St. Louis, Mo. Westinghouse Distributor: WESCO, St. Louis, Mo.




In executive offices like this or in general offices,  Mainliner luminaires add distinctive styling and high lighting levels.






Ceiling view shows intensified illumination cast by  Heavy-duty Industrial luminaires on one of the letterpress printing machines.

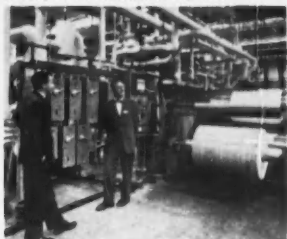




Plant view shows consistent evenness of  Heavy-duty Industrial lighting. A more than adequate 32-ft. candles is averaged by these 2WSOS two-lamp luminaires.




Discussing a  combination Motor Control Center and Switchboard arrangement are S. N. Kraines, Waxide's Senior Indust. Engineer, Emil Zolezzi and Vince Kelly. New design, shallow depth switchboard matches control center, contains molded case circuit breakers feeding power circuits.

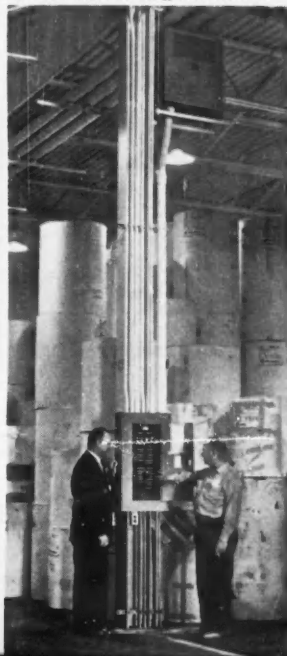
Discussing a  Life-Line Starter located at a laminator waxing machine are J. R. Miller,  Construction, and John Day, Project Engineer, A. C. Martin & Assoc.




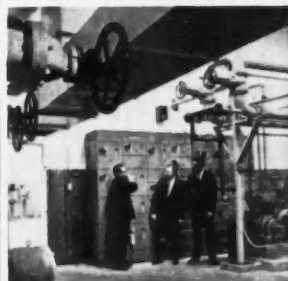
Centralized control at tank mixer provided by  Class 11-350 Motor Control Center. Stacked starter units can be interchanged, are engineered to reduce hazards and are easy to maintain and install. Left to right on platform are: Hal Forister,  Emil Zolezzi, Tom Fogarty, V. P., Ledbetter Electric, and S. N. Kraines.



Emil Zolezzi, WESCO, and Vince Kelly, Ledbetter Electric's Superintendent, discuss  type NLAB Panelboard. A compact, lightweight 75-Kva Dry-type DT-3 Transformer was easily mounted overhead, providing 120/208 V.



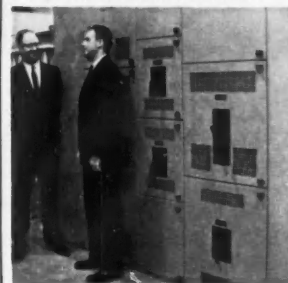
Hal Forister, , explains function of 15 Kv main 150 DH250 air-circuit breaker in this metal clad switchgear line-up to Messrs. Kraines, Fogarty and Zolezzi. Plant's distribution system is designed so that in case of fault, one power center feeder can be isolated while others still operate.



Discussing the ease of operation of a starter unit are Messrs. Forister, Fogarty and Kraines. This motor control center uses combination Life-Line Starters for fast, positive protection of all mechanical equipment room motors.



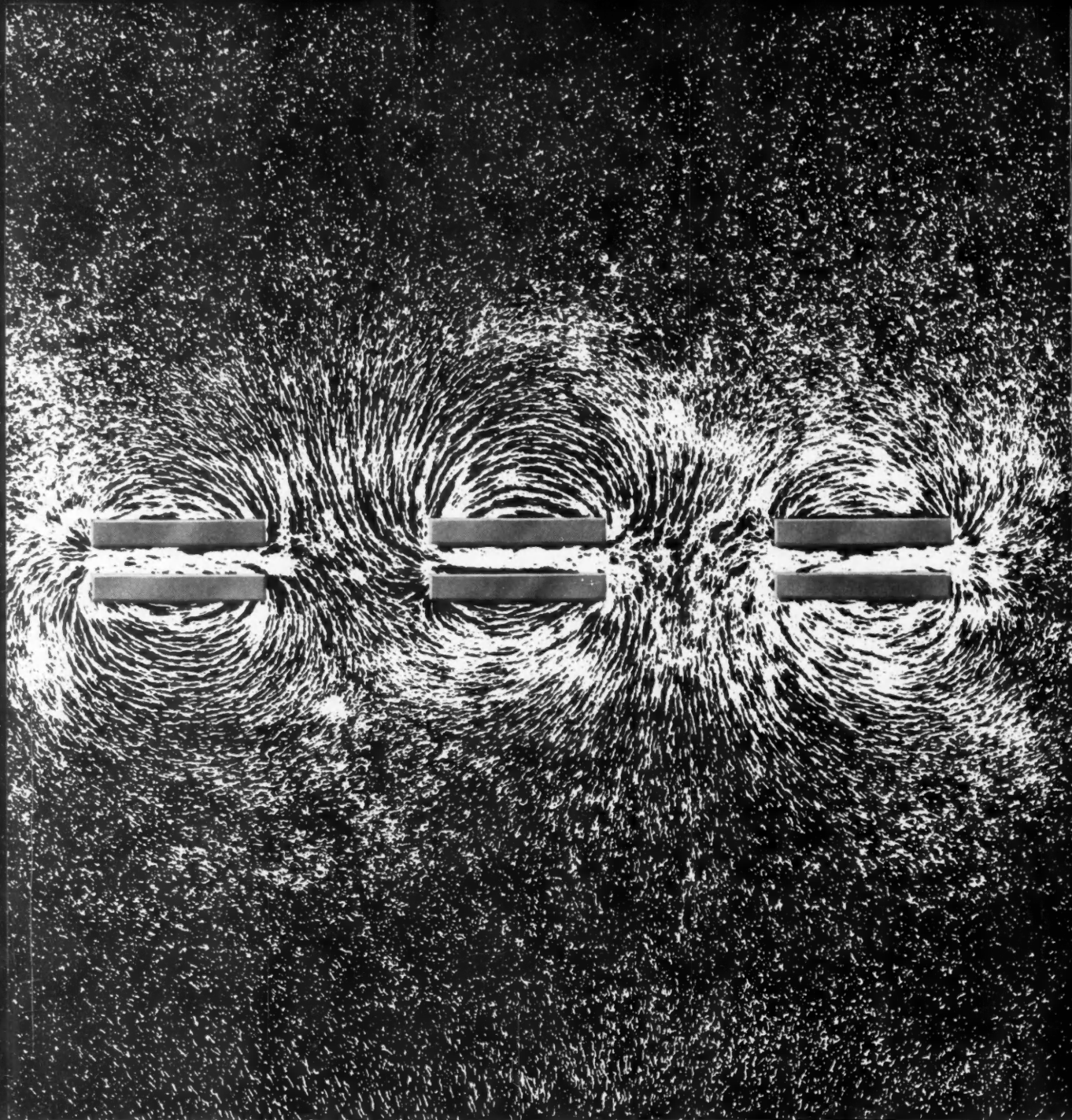
Paul Olschner, WELCO Dist. Const. Mgr., St. Louis, shown at a 150-Kva outdoor Inerteen® power center. This completely self-contained unit, with non-flammable coolant, provides circuit protection and supplies power to an emergency fire pump for plant protection.



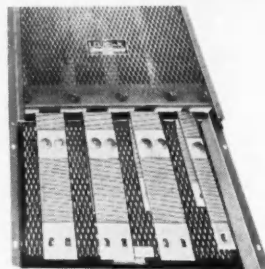
Messrs. Olschner and Miller view Type DB Circuit Breakers used in the LV switchgear end of a 750-Kva Power Center. Type DB breakers are well applied in industrial plants where power switching and protection is required. Draw-out feature allows easy maintenance.



Westinghouse



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I-T-E CIRCUIT BREAKER COMPANY

BULLDOG ELECTRIC PRODUCTS DIVISION

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The Nonconformist

Going over a complex installation with an electrical contractor a few weeks ago, we discovered that he had negotiated and coordinated the entire project which involved several other trades. He reported that when he proposed the procedure, it was not only quickly accepted, but the customer was actually grateful to be relieved of the many details involved. The job is also expected to return a quite adequate profit.

Such odd behavior can be forgiven because the contractor is a young man who has been exposed to some training in modern business administration and he is, perhaps, not yet fully aware of the importance of following traditional procedures in the electrical contracting business. An older experienced hand could quickly detect a quite lengthy list of serious departures from conventional practice.

For example, he approached the customer without a written invitation to bid. This is not only unconventional but it fails to convey the impression of granting a substantial favor which everyone knows is necessary to keep the customer in his proper place. Also, he did not insist upon being the low bidder and, perhaps worse, he negotiated the contract and there were no other bidders. As a consequence of his unusual tactics, from twelve to twenty good electrical contractors were denied the opportunity to prepare estimates—a procedure which normally occupies the time and attention of some of the industry's most talented people.

In undertaking to coordinate the entire project, he is obviously far afield from standard practice. Electrical contracting alone is a difficult and exacting business. The contractor has plenty of his own problems to compel his undivided attention. Why then should he concern himself with his customer's problems? If he does, who knows what outlandish projects the customer might ask him to handle?

Performing the work at a profit is, beyond question, his most serious departure from accepted procedures. Electrical contracting is an exciting game, rich in intangible rewards for those who will throw their hearts and fortunes into it. The accepted industry rule would appear to be that profit is optional, preferably modest and achieved only in return for substantial risks.

Wm. T. Stuart



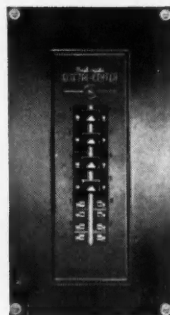
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GIVE POSITIVE, FOOLPROOF CONTACT. NO CALLBACKS. BUY TOP
QUALITY, ABSOLUTE DEPENDABILITY . . . BUY PUSHMATIC. SEE YOUR
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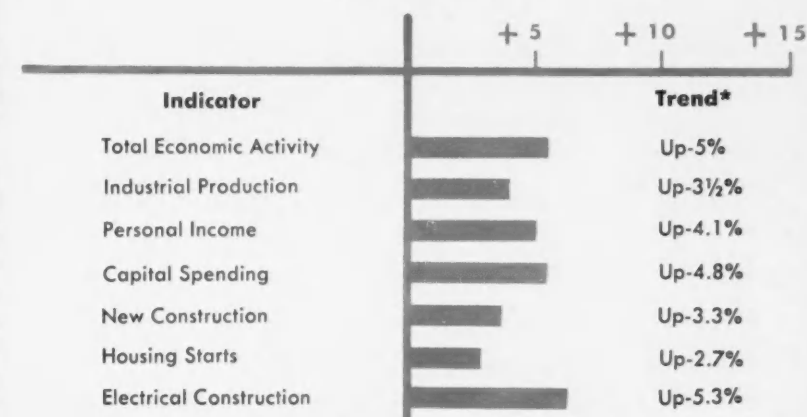


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"The Story Behind the Ad".

EIGHTH ANNUAL STATISTICAL SUMMARY

ECONOMIC OUTLOOK

(Trends for 1963)



*Change from 1962. E. I. C. & M. estimate, mid-1962.

TRENDS INDICATE

Sound Growth IN Electrical Markets

Growing demand, increased spending, and renewed business confidence are reflected by current trends, notwithstanding the recent slowdown in economic activity. These factors, plus an optimistic outlook for new construction, point to continuing growth in the electrical industry.

By Berlon C. Cooper

THE NATIONAL ECONOMY

THE American economy is now at its highest level in history.

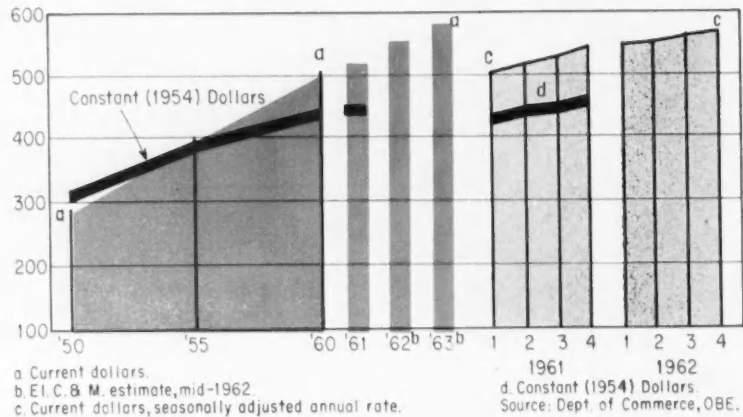
Also, most of the basic requirements for continued economic growth seem to be present at this time. Thus, for the remaining quarter of 1962, and for the year 1963, the outlook for the electrical industry is for continued growth.

This outlook may appear to be highly optimistic, especially when the pessimism of the headlines during the spring and summer months, and the worry about the state of the economy during the same period, are considered. This pessimism and worry would seem to have been overemphasized, how-

ever, in the light of the trends of various economic barometers which are presented in the following statistical summary. Also, it would seem to have been overplayed in view of President Kennedy's decision in mid-August not to ask for tax cuts, which were being urged by many groups at that time, to

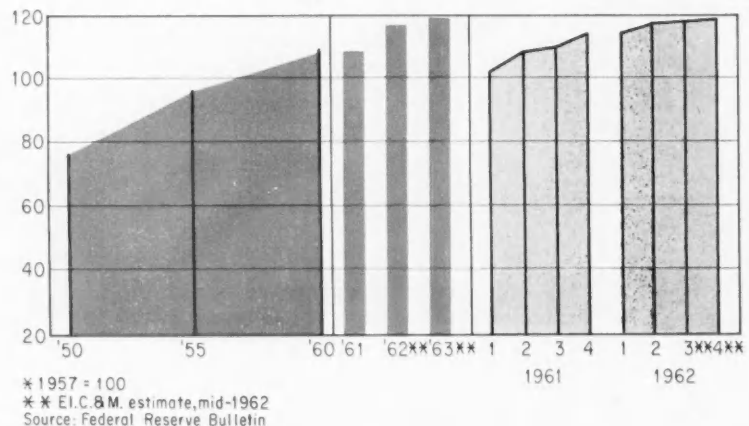
GROSS NATIONAL PRODUCT (Billions of Dollars)

Economic growth over the 11-year period of 1950 through 1961 totaled 83%, or an average annual increase of 7.5% per year, based on current prices. Measured in constant (1954) dollars, the actual physical growth was 41% for the period. Estimated growth for 1962 is 6.8%, based on current prices, or only slightly below the 11-year annual average. The forecast for 1963, based on current trends, is for an increase of 5%.



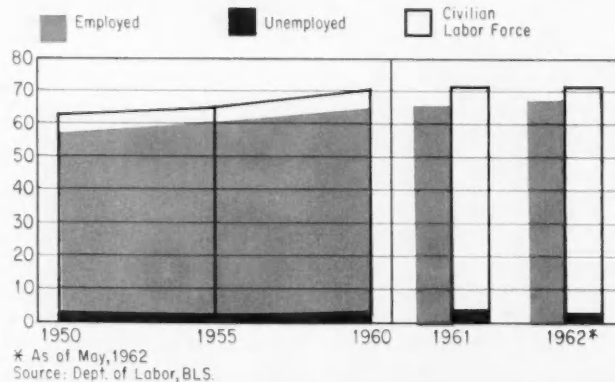
INDUSTRIAL PRODUCTION (FRB Index)*

Industrial output is at an all-time high rate, except in steel, as was evidenced by the record high FRB Index of 118 for June of this year. Inventories are at a low level, and demand for goods, including steel, is on the increase. Thus the outlook for industrial production is good and for continuing growth.



EMPLOYMENT AND UNEMPLOYMENT (Millions of Persons)

Unemployment in June increased seasonally to 5.9% of the civilian labor force, as a new group of students started looking for jobs. Meanwhile, employment was at a record high of 69.5 million in June.



further speed economic growth.

The recent pessimism and worry, however, are not due entirely to the slowdown in the economy which has been reflected by the monthly statistics. This slowdown has helped, rather, to confirm fears which have resulted from other actions. These fears were an outgrowth of President Kennedy's crackdown on price increases proposed by the steel industry in April of this year, and of the subsequent stock market break in prices. In essence, businessmen interpreted the price crackdown action as an effort on the part of Government to inject further control of business, and as a further squeeze on profits, holders of stocks and investments decided that further profits-squeezing would curtail dividends on their investments. Thus, the pessimism and worry about the status and growth of the economy was a reflection of a lack of confidence in the nation's future under the guidance of an Administration which has exhibited many anti-business tendencies.

Presented here, for the eighth consecutive year, is a roundup of statistics covering both the national economy and the electrical industry. This year, the statistics are selected to provide both a long-range and a short-range view of trends. The long-range trends are indicated by the figures for 1950, 1955 and 1960, which provide a sufficiently broad base to show the general trend. The short-range trends can be interpreted by the figures on an annual basis for 1960, 1961 and 1962. Thus each chart or table in general accomplishes two purposes, and should be analyzed from that standpoint.

Economic Trends

Based on the trends shown by various economic barometers, and taking into account current demands, inventory status, and spending plans by business, government and consumers, the outlook for the economy in 1963, as measured by certain indicators, is summarized in the chart "Economic Outlook." Note that the trend is "up" for each of the seven indicators shown. The increases shown are not spectacular, but all do represent continued growth. The status of the economy at this time is such that no real boom period is in sight. On the other hand, neither is a recession of any mag-

PERSONAL INCOME, TAXES, DISPOSABLE PERSONAL INCOME

(Billions of Dollars)

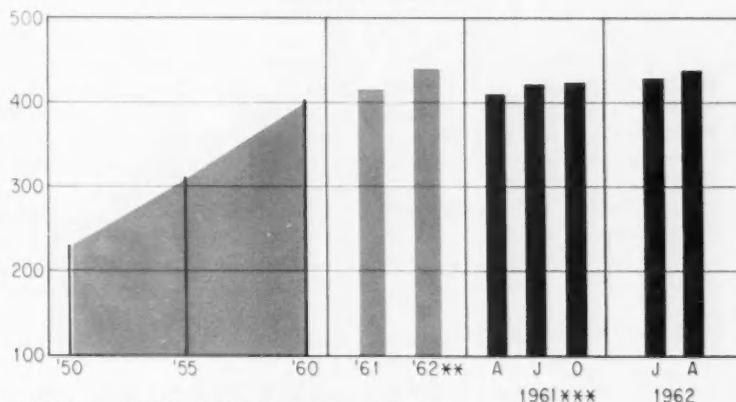
Year	Personal Income	Taxes		Disposable Personal Income
		Federal	State	
1950	228.5	18.2	2.6	207.7
1955	310.2	31.5	4.2	274.5
1960	402.2	43.2	7.2	351.8
1961	416.7	43.9	8.0	364.9
1962*	432.9	46.0	8.7	378.2

* First quarter, at seasonally adjusted annual rate.
Source: Dept. of Commerce, OBE.

Personal income has increased 90% over the past 12 years (1950 to 1962), while personal taxes (Federal and State) have increased 163%. The increase in disposable personal income is 82%. Thus, while personal income has continued its upward climb, consumers spend directly over 2.6 times as much on government as in 1950, and have a smaller percentage left for goods, services, and savings.

PERSONAL INCOME

(Billions of Dollars)*



* Monthly average, seasonally adjusted at annual rates.

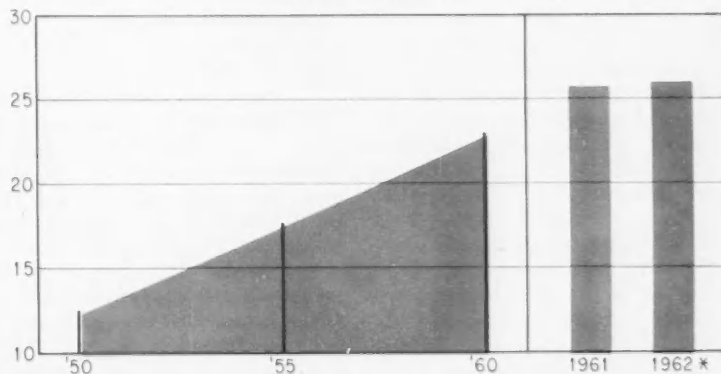
** E. I. C. & M. estimate, mid-1962.

*** Seasonally adjusted, at annual rates.

Source: Dept. of Commerce, OBE.

PERSONAL SAVINGS

(Billions of Dollars)



* 1st quarter, seasonally adjusted annual rate.

Source: Dept. of Commerce, OBE.

CONSUMER SPENDING

(Billions of Dollars)

Year	Durable Goods	Nondurable Goods	Services	Personal Consumption Expenditures
1950...	30.4	99.8	64.9	195.0
1955...	39.6	124.8	92.5	256.9
1960...	44.3	152.4	132.2	328.9
1961...	42.3	155.5	141.2	339.0
1962*...	44.8	159.8	147.3	352.0

* First quarter only, seasonally adjusted annual rate.
Source: Dept. of Commerce, OBE.

CONSUMER CREDIT

(Billions of Dollars)

Year	Installment Credit	Noninstallment Credit	Total Consumer Credit
1950.....	14.7	6.8	21.5
1955.....	29.0	9.9	38.9
1960.....	43.3	12.8	56.1
1961.....	43.2	14.0	57.2
1962*.....	43.3	13.4	56.7

* Outstanding, as of April, 1962.
Source: Board of Governors of Federal Reserve System.

In 1962 consumers will spend 93% of their disposable income for goods and services; 12% for durable goods; 42% for nondurable goods; and 39% for services. Remaining 7% will go into savings. With personal savings at new highs in 1961 and 1962, consumer credit has declined slightly.

nitude indicated. With President Kennedy's decision in mid-August not to ask for a "quickie" tax cut, for the purpose of spurring economic growth, the nation's business climate seemed to improve. Further, the President's promise to recommend an across-the-board, top-to-bottom cut in both corporate and personal income taxes, to become effective January 1, 1963, may result in renewed confidence in the economy, and further improve the outlook which we have presented here.

Total economic activity, or gross national product, was at an annual rate of \$552 billion in this year's second quarter. That was a \$3.7 billion increase over the first quarter annual rate, and a \$9.8 billion increase over 1961's fourth quarter rate. The total for 1962 is now estimated at \$557 billion, or \$35.7 billion over the 1961 total. Currently bolstering this year's outlook for the second half of the year is a return to inventory build-up, increased capital spending, record expenditures for new construction, and increased spending by consumers, Federal, state and local governments. When combined, these factors should easily push GNP to a new record of about \$567 billion in this year's fourth quarter. In the year ahead, 1963, GNP should cross the \$600 billion mark during the third quarter, possibly earlier.

Industrial production in July stood at a record 119% of the 1957 average, up from 118% in May and

June. The index in July 1961, one year earlier, was 112%. The July increases were widespread across the various industries, but much of the credit went to the auto industry. Steel production actually edged down to 77% of the 1957 average in July, from 78% in June, but now shows signs of a slow pick-up in the months ahead.

Employment is at an all-time high, registering 69.6 million in July, up over a million from July a year earlier. However, unemployment still remains high, too, at 4 million, or 5.3% of the total labor force.

Personal income rose to a seasonally adjusted record annual rate of \$442 billion in July, up \$1.3 billion from the June pace. Estimated personal income taxes, both Federal and state, for 1962 is \$54.7 billion, which leaves disposable personal income for 1962 at a \$387.3 billion annual rate. This would be a 6.1% increase over 1961, which further adds to the element of demand for more goods and services. Note that over the 12-year period of 1950 to 1962, Federal personal income taxes have increased 153%, while state personal income taxes have skyrocketed 235%. The personal income growth rate trend is shown in the "Personal Income" chart, while the personal income tax trend and disposable personal income trend are presented in the table on "Personal Income, Taxes, and Disposable Personal Income."

Personal savings during the first quarter of this year were at a sea-

sonally adjusted annual rate of \$26.2 billion, a record. This was about 6.7% of the estimated \$387.3 billion disposable personal income for 1962, which is approximately normal for the annual averages over the past decade.

Consumer Spending

Consumers are now spending at an annual rate of about \$360 billion (\$352 billion in 1st quarter 1962). This is at an annual rate some \$21 billion higher than in 1961. The table on "Consumer Spending" shows the relative amounts for durable and nondurable goods, and for services. In the 12-year period from 1950 to 1962, the increases have been as follows: durable goods—47.4%; nondurable goods—60.1%; and services—127%. Total consumer credit has surged ahead 164% since 1950, as shown in the table on "Consumer Credit." New car purchases, now running at an annual rate of nearly seven million, have boosted installment credit over the past several months.

Inflation

The value of the dollar has been eroding continuously, as can be seen by the chart, "Purchasing Power of the Dollar." Using 1947-49 as a base period, the 1960 dollar was worth 79.1 cents, and the 1940 dollar was worth \$1.67. Stated differently, the 1960 dollar, appraised in 1940 dollars, was worth only 47.4

cents. The decline in the value of the dollar has been consistent, from year to year, and still continues, although at a slower rate over the past four or five years (see "Cost-of-Living" chart).

In general, prices have stabilized to considerable extent over the past few years. Using the BLS Index on Wholesale Prices, prices in 1962 were up 19.1% from the 1947-49 base period. Price stability has been promoted through efficient production, and with ample excess production capacity in most industries, and has been achieved notwithstanding the continuing increases in labor costs. Over-all inflation still remains a threat, and has not been eliminated. But its growth has been retarded over the past three or four years.

Government Spending

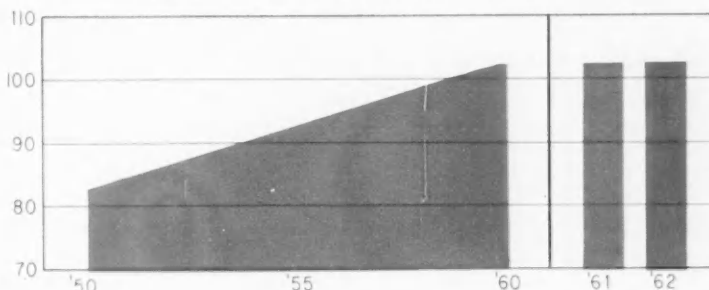
America's national (public) debt reached and passed \$300 billion for the first time in its history on August 15, 1962, according to a report by the U. S. Treasury Department. What does this mean to the average citizen? First of all, it means that the debt amounts to \$1600 for each man, woman and child. But more importantly, it means that taxpayers annually fork up in excess of \$9 billion for interest, or over \$48 per man, woman and child. Each year the Treasury must pay off more than a quarter of its \$300 billion debt, either by putting up cash or by trading new securities for old. Since the Government continues to spend more each year than it takes in (run up a deficit), the money to meet its annual obligations is raised chiefly by borrowing, an act that also helps to push up borrowing costs for private borrowers. With the Federal budget now running at approximately \$93 billion (for fiscal 1963), the estimated \$9.4 billion interest bill requires one dollar out of every ten being spent by the Government. The growth of Government spending, both total and broken down by major classes of spending, is shown in an accompanying table.

Growth in Federal spending is, of course, the key to President Kennedy's urge to get the economy "moving ahead." When the economy expands, tax income increases, and more money can be spent by the Federal government on its various projects.

GROWING INFLATION CONTINUES DOLLAR DEVALUATION

COST-OF-LIVING

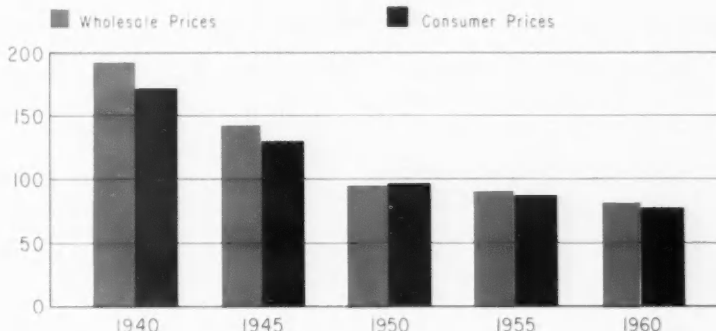
(Consumer Price Index: 1957-59 = 100)



* Monthly, as of June 1962

PURCHASING POWER OF THE DOLLAR

(Based on 1947-49 = 100)*



* Obtained by computing reciprocals of price indexes, expressed as percentages with average of base period 1947-49 = 100. Source: Dept. of Commerce, OBE.

WHOLESALE PRICES (All Commodities)

Year	BLS Index*
1950	103.1
1955	110.7
1960	119.6
1961	119.2
1962**	119.1

* Bureau of Labor Statistics Index. 1947-49 = 100.

** As of May 1962.

Note: New indexes based on 1957-59 = 100 shows May 1962 as 100.2.

Year	BLS Index*
1960	100.7
1961	100.3

Monthly

1961—Apr.	100.5
—July	99.9
—Oct.	100.0
1962—Jan.	100.8
—Apr.	100.4

* New series, BLS Index based on 1957-59 = 100.

Source: Dept. of Labor, BLS.

GOVERNMENT SPENDING OUTPACES REVENUE

FEDERAL GOVERNMENT SPENDING AND PUBLIC DEBT

(Billions of Dollars)

Fiscal Year	Major National Security	Veterans' Services and Benefits	Agriculture and Agricultural Resources	Interest	All other	Total	Public Debt.
1954.....	46.9	4.3	2.6	6.5	7.2	67.5	271.3
1955.....	40.6	4.5	4.4	6.4	8.5	64.4	274.4
1958.....	44.1	5.0	4.4	7.7	10.1	71.4	276.3
1959.....	46.4	5.2	6.5	7.7	14.5	80.3	284.7
1960.....	45.6	5.0	4.8	9.3	11.7	76.5	286.3
1961.....	47.4	5.3	5.2	9.1	14.5	81.5	288.8

Source: Federal Reserve Bulletin.

EMPLOYEES IN GOVERNMENT

(Annual Average-in Thousands)

FEDERAL GOVERNMENT

Year	Total Employees	Executive	Legislative	Judicial
1960.....	2,270	2,242.6	22.6	4.9
1961.....	2,279	2,250.9	23.3	5.1
1962 (March).....	2,294	2,264.8	23.5	5.4

STATE AND LOCAL GOVERNMENT

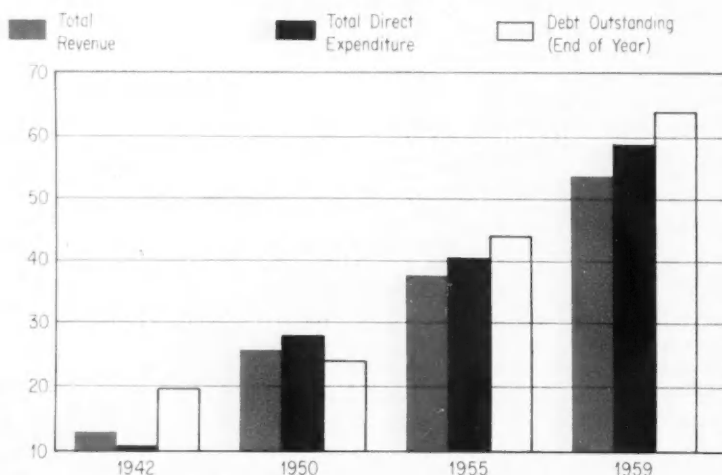
(Annual Average-in Thousands)

Year	State	Local	Education	Other (S & L)	Total
1960.....	1,592.7	4,657.0	2,983.3	3,266.4	6,250
1961.....	1,663.6	4,884.5	3,175.4	3,373.9	6,548
1962 (March).....	1,710.9	5,116.7	3,456.9	3,370.7	6,828

Source: Dept. of Labor, BLS.

STATE AND LOCAL GOVERNMENT SPENDING

(Billions of Dollars)



Source: Dept. of Commerce, Census Bureau

Further examples of the burgeoning growth of government spending are shown in the table "Employees in Government," and in the chart "State and Local Government Income and Spending."

Notwithstanding a request from President Kennedy last October to Cabinet officers and Federal agency heads to keep the number of Government employees to a minimum, "consistent with getting the job done," the 1962 fiscal year-end Federal job total in June was 77,851 more employees than the Government had in June 1961. Also, the Federal payroll on June 30 was in excess of \$14 billion, an all-time record.

Revenues collected by state and local governments increased 213% between 1942 and 1959, while total direct expenditures by these same governments increased 337%.

THE ELECTRICAL INDUSTRY

THE electrical industry has been growing at a slightly faster pace than the national economy as a whole. Thus, with the national economy at a record high, the electrical industry is also at its highest point on record. For the year 1962, it is estimated that total dollar volume for all branches of the electrical industry will exceed \$43 billion, or about 7.7% of total economic activity (GNP).

Here are some highlights of electrical growth in 1962. Electric power output will be about 860 billion kwhr, up 7.5% from 1961. Electrical construction work will total about \$5.7 billion, up 6% from 1961. Lighting equipment dollar volume will exceed \$600 million, up about 3.5% from last year. Electric comfort heating sales will climb about 10% over 1961 volume. Shipments of electrical appliances are expected to increase about 6%.

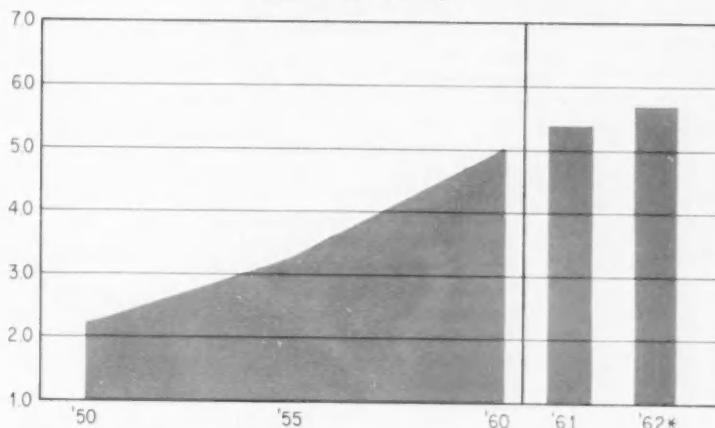
In a recent survey of 1962 second quarter profits, conducted by Dow Jones and Company, Inc., 23 electrical equipment-electronics firms reported a combined 25.2% increase in earnings over the comparable quarter in 1961. This compared with an average 15.5% increase in profits for 478 firms surveyed, which included a typical cross-section of all industry, with 37 different industries represented. Only six of the industries showed higher combined increases in earnings than did the electrical industries represented in the survey.

Electrical industry market growth patterns, like those of most other industries, are, of course, closely linked with national economy growth patterns. For maximum growth opportunity, especially for certain of the electrical markets, a healthy general business climate is desirable, and a stable, sound and growing national economy is a necessity.

As will be recalled, the national economy drifted through 1960 at a plateau of \$500 billion GNP, not varying over \$5 billion (annual rate) throughout the entire year. The annual GNP for 1959 was \$482.8 billion, so the 1960 level was a plateau approximately \$15 to \$18 billion above the 1959 annual level.

Beginning with the first quarter of 1961, as the Kennedy Administration came into office, the GNP declined \$3.7 billion to \$500.8 bil-

ELECTRICAL WORK IN CONSTRUCTION
(Billions of Dollars)



Source: Electrical Construction and Maintenance
* E. I. C. & M. estimate, as of mid-1962

1962 ELECTRICAL CONSTRUCTION
(Millions of Dollars)

Type of Construction	Volume*
Private Funds	
Residential.....	980
Industrial**.....	435
Commercial and institutional.....	1,080
Utilities***.....	402
Farms.....	105
Other.....	12
Total Private.....	3,014
Public Funds	
Residential.....	33
Industrial.....	70
Educational.....	412
Institutional.....	225
Military.....	102
Highway and conservation.....	304
Other.....	30
Total Public.....	1,176
Total for new construction.....	4,190
Total for modernization and repairs****.....	1,500
Total electrical construction work.....	5,696

* E. I. C. & M. estimate as of mid-1962.

** Does not include motors, controls or electrical equipment which are a part of machines or manufacturing processes.

*** Does not include electrical apparatus used in generation and distribution, nor communication equipment.

**** Does not include replacement lamps.

lion annual rate. The second quarter showed a healthy pickup to \$516.1 billion annual rate. Further increases were registered in the third and fourth quarters, to \$525.8 and \$542.2 billion annual rates respectively.

As 1962 figures came in, it be-

came apparent that the economy was losing some of its steam. First quarter GNP was up \$6.1 billion annual rate over 1961's fourth quarter rate. Then the second quarter annual rate was \$552 billion, for an increase of only \$3.7 billion annually. Thus the national economy

1962 OUTLOOK FOR NEW CONSTRUCTION

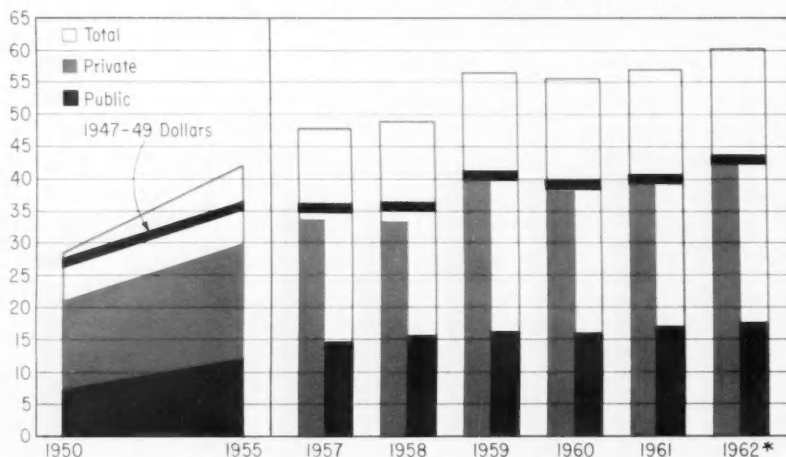
(Millions of Dollars)

Type of Construction	Dollar Value			% Change 1961/1962
	Actual 1960	1961	Estimate* 1962	
TOTAL NEW CONSTRUCTION	55,556	56,925	60,075	+6
PRIVATE CONSTRUCTION (Total)	39,603	40,009	42,500	+6
Residential buildings (nonfarm).....	22,546	22,499	24,650	+10
New housing units.....	16,422	16,188	17,900	+11
Additions and alterations.....	5,199	5,139	5,500	+7
Nonhousekeeping.....	925	1,172	1,250	+7
Nonresidential buildings (nonfarm).....	10,168	10,754	11,000	+2
Industrial.....	2,851	2,759	2,600	-6
Commercial.....	4,180	4,663	4,825	+3
Office buildings and warehouses.....	2,121	2,350	2,375	+1
Stores, restaurants and garages.....	2,059	2,313	2,450	+6
Other nonresidential buildings.....	3,137	3,332	3,575	+7
Religious.....	1,103	984	1,000	+2
Educational.....	566	592	625	+6
Hospital and institutional.....	605	787	900	+14
Social and recreational.....	707	701	750	+7
Miscellaneous.....	246	268	300	+12
Farm construction.....	1,285	1,473	1,500	+2
Public utilities.....	5,323	5,033	5,100	+1
Railroad.....	285	222	225	+1
Telephone and telegraph.....	1,088	976	1,000	+2
Electric light and power.....	2,058	2,050	2,125	+4
Gas.....	1,767	1,650	1,500	-9
Other public utilities.....	125	135	250	+85
All other private.....	281	250	250	0
PUBLIC CONSTRUCTION (Total)	15,953	16,916	17,575	+4
Residential buildings.....	716	840	950	+13
Nonresidential.....	4,792	5,132	5,150	0
Industrial.....	407	444	425	-4
Educational.....	2,818	3,051	3,000	-2
Hospital and institutional.....	400	370	400	+8
Administrative and service.....	598	674	725	+8
Other non residential building.....	596	593	600	+1
Military facilities.....	1,386	1,368	1,250	-9
Highways.....	5,464	5,700	6,200	+9
Sewer and water systems.....	1,487	1,581	1,725	+9
Sewer.....	882	914	1,050	+15
Water.....	605	667	675	+1
Public service enterprises.....	649	585	500	-15
Conservation and development.....	1,221	1,350	1,400	+4
All other public.....	238	360	400	+11

* As of mid-1962, by BDSA, Dept. of Commerce. Source: Dept. of Commerce, BDSA.

GROWTH OF NEW CONSTRUCTION

(Billions of Dollars)



* Mid-1962 estimate by BDSA, Dept. of Commerce. Source: Dept. of Commerce.

New construction, a major factor in the national economy, has a consistent record of doubling about every ten years in the postwar period. Even physical growth, as measured in constant (1947-49) dollars, has been registered in most years. Outlook is for continued growth in 1962 and 1963.

As has been shown in the earlier discussion on the national economy, there are signs of continued economic strength, and further growth in the months ahead. As will be shown in the following analysis of economic indicators closely related to electrical industry markets and growth, such as new construction activity, capital expenditures, electrical utility industry expansion, etc., the outlook for the electrical industry is good, especially through 1962, and probably through most of 1963.

Electrical Construction Work

Electrical work this year will show an increase of about 6% over 1961, and the forecast for 1963 is for an increase over this year's total of 5.3%, or approximately the same rate of increase as in 1962.

Referring to the chart at top of page 97, it can be seen that electrical work more than doubled in the decade of 1950-1960 (actual increase was 128%). During this same period, new construction activity on an annual basis increased 45%, in current dollars, from \$26.6 billion in 1950 to \$38.7 billion in 1960, not including modernization work. Part of the higher increase in electrical work resulted from high modernization activity, but mostly the increase resulted from technological advancements and continuing increases in electrical standards.

The forecast for electrical construction work in 1962 is shown in the table on page 97. Note that over one-fourth of the total volume is indicated for modernization and repair work, or \$1.5 billion volume out of \$5.7 billion volume. Also, it is interesting to note that construction activity paid for with private funds accounts for 53% of the total, while public fund construction accounts for 20.6% of the total. Further analysis of this table will indicate the relative size of markets for electrical work involved in the various types of construction work.

New Construction Activity

Electrical construction work dollar volume is dependent wholly upon two basic activities—new construction, and modernization and repair. Statistical data are made available promptly on new construction activity, which currently accounts for about 73½% of electrical construction work, but is not generally available on modernization

BACKLOG OF PROPOSED ENGINEERING CONSTRUCTION

(Thousands of Dollars)

Type of Construction	Backlog*	% of Total
Private Projects		
Bridges.....	121,997	0.1
Industrial buildings.....	18,030,906	14.2
Commercial buildings.....	29,458,602	23.3
Unclassified.....	10,684,345	8.4
Total private projects.....	58,295,850	46.0
Public Works Projects		
Waterworks.....	3,089,961	2.4
Sewerage.....	4,437,971	3.5
Bridges.....	3,216,756	2.5
Earthwork, irrigation, drainage.....	11,961,583	9.5
Streets and roads.....	13,183,595	10.4
Buildings.....	22,987,205	18.1
Unclassified.....	9,654,133	7.6
Total public works projects.....	68,531,204	54.0
Total backlog (private and public).....	126,827,054	100.0
Federal Government work, included in public works projects.....	13,873,461	10.9

* For United States, including Alaska and Hawaii, as of June 30, 1962.

Source: Engineering News-Record.

NEW CONSTRUCTION IN AN EXPANDING ECONOMY

(Billions of 1960 Dollars)

Type of Construction	1950*	1955*	1960	1975**	2000**
Total new construction.....	42.7	52.9	55.6	107.4	218.7
Total private construction.....	33.1	39.6	39.6	75.5	147.3
Residential (nonfarm)....	20.2	23.3	22.5	45.5	74.2
Commercial/industrial....	3.4	6.7	7.0	11.9	29.4
Public utilities.....	5.2	5.4	5.3	9.2	22.8
All other private.....	4.3	4.2	4.8	8.9	20.9
Total public construction..	9.6	13.3	16.0	31.9	71.4
Educational.....	1.6	2.9	2.8	5.5	9.2
Highways.....	2.6	4.0	5.5	12.1	27.5
All other public.....	5.4	6.4	7.7	14.3	34.7

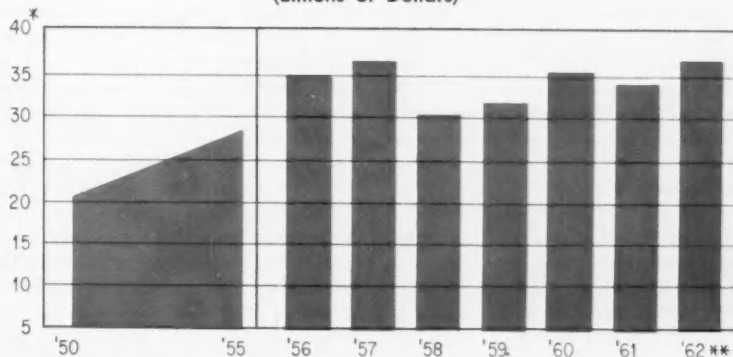
* Actual values in current dollars adjusted to 1960 dollars.

** Mid-1961 estimate by BDSA, Dept. of Commerce.

CAPITAL SPENDING BY BUSINESS

(For New Plant and Equipment)

(Billions of Dollars)*

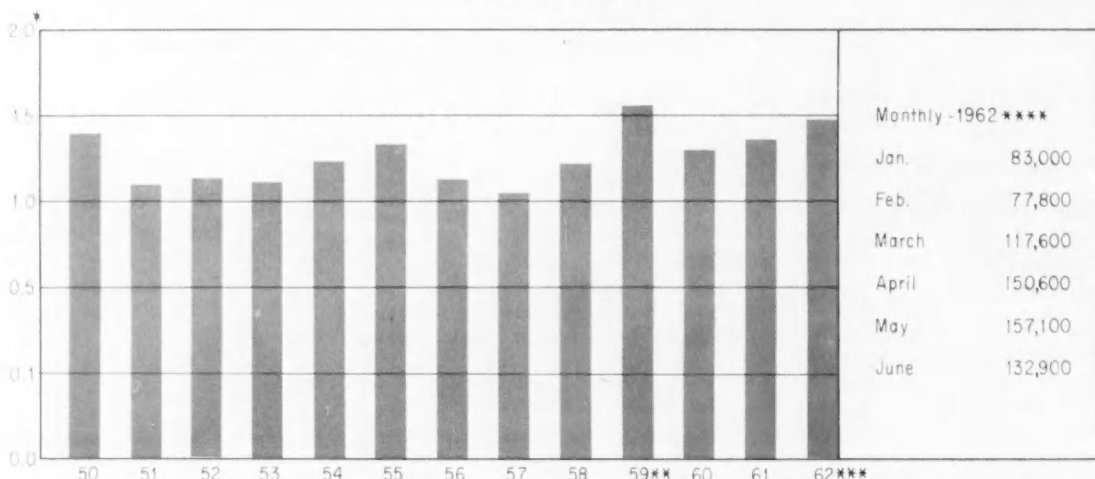


* In current dollars

** Anticipated by business, as of May 1962

Source: Dept. of Commerce and Securities and Exchange Commission

HOME BUILDING ACTIVITY

NEW HOUSING STARTS
(Millions of Units)

* Total starts, including private and public. ** New statistical series, includes Alaska and Hawaii. Starts based on old series, were 1,378,500.
 *** Dept. of Commerce estimate, mid-1962. **** Unadjusted monthly total. Source: Dept. of Commerce.

and repair activity for more than a year later.

New construction this year will show a 6% increase over 1961's record \$56.9 billion total, and should pass the \$60-billion mark, according to a mid-year estimate by the Building Materials and Construction Industries Division, Business and Defense Services Administration, Department of Commerce.

Construction spending using private funds is expected to exceed \$42 billion this year, and should account for the major part of the total dollar gain of \$3.2 billion anticipated for all construction. Public construction spending, although estimated to reach a record level of \$17.6 billion this year, should show a somewhat lower rate of increase this year than in 1961—4% as against 6% last year.

A detailed breakdown of the 1962 new-construction dollar volume for various types of construction is given in the table "1962 Outlook for New Construction."

In this latest review of the outlook for 1962 new construction, outlays for new private housing units and highways are expected to exceed previous forecasts with strong

increases of 11% and 9% respectively. Outlays for private industrial and public education structures are expected to decline below 1961 levels, reversing an upward trend which had seemed indicated previously.

Industrial Construction Down

It may be noted that the types of construction which are providing strength to this year's growth outlook are housing and highways, which carry a small potential for electrical construction work, while industrial and educational construction, which normally carry a high potential for electrical construction work is on the decline. It is assumed that this trend will carry over into 1963, and thus curtail the 1963 dollar volume potential for electrical construction work to some extent.

Motel construction expenditures show some signs of slackening from the very rapid rate of gain in the last few years. Nevertheless, the nonhousekeeping category of construction, which is influenced largely by motel building, is expected to exceed the 1961 level by

approximately seven percent.

All types of private nonresidential buildings, except private industrial construction, are expected to exceed 1961 levels, with gains ranging from 1% for office buildings, to 14% for hospitals and institutional buildings.

The downtrend in 1962 industrial construction is expected to reduce the level of spending on new plants to \$2.6 billion, down 6% from the 1961 total. Industrial construction spending reflects a number of factors, such as a relatively good capacity situation in relation to current output, emphasis on modernizing existing plants with new equipment, and the design of structures to permit better space utilization which yield greater output potentials within smaller areas of constructed facilities.

Work on office building projects under way in 1961 in New York City has contributed strongly to the maintenance of high levels for the office building and warehouse type of construction. The growing number of new building projects developing this year outside of New York City are smaller in size, thus tending to limit the relative gains

GROWTH OF RESIDENTIAL CONSTRUCTION

(Millions of Dollars)

Year	Volume	
	New Dwelling Units Only	Total*
1950	11,870	14,445
1951	10,444	13,124
1952	10,524	13,496
1953	11,111	14,333
1954	12,406	15,715
1955	15,253	16,858
1956	13,802	15,631
1957	12,670	17,081
1958	14,398	18,893
1959**	20,195	25,431
1960	17,181	22,782
1961	17,083	23,408
1962***	18,850	25,600

* Includes new dwelling units (private and public), additions and alterations, and nonhousekeeping.

** New statistical series, includes Alaska and Hawaii.

*** Dept. of Commerce estimate, as of mid-1962.

Source: Dept. of Commerce, BDSA.

in over-all spending for office buildings in 1962 as compared to 1961.

Suburban growth continues to be the dominant factor in determining present high expenditure levels for shopping centers, schools, hospitals and recreational facilities paid for with private funds.

In the farm classification, slightly rising incomes in 1962 are tending to maintain construction levels. The decreasing number of farms, however, is shifting the emphasis to construction of nonresidential facilities.

Public utilities construction spending in 1962 will show only a small over-all increase. New large oil pipeline spending, modest gains for electric light and power, and telephone facilities are expected to more than offset lower construction spending for gas utilities construction.

Construction spending with public funds is expected to increase about 4% in 1962 over 1961, to \$17.6 billion. An increase of \$500 million for highway spending this year will boost this type of construction to a record \$6.2 billion. Military facilities expenditures are tapering off somewhat, as they are

heavily influenced by the fulfillment of requirements in the missile base construction program. Educational construction will drop slightly this year from 1961 levels, as educational construction programs are reviewed. Because of the continued shifting of population to the suburbs, and the shift in needs as between elementary and secondary school levels, many communities are deferring programs while they take a close look at the rapidly changing school enrollment situation.

The Department of Commerce forecast, as outlined above, is based on new construction work "put in place." The F. W. Dodge Corporation collects statistics on "contracts let," and similar trends are indicated by the latest Dodge statistics. Specifically, in August Dodge reported "The performance (of construction contracts) has been nothing short of phenomenal (for the first five months of 1962), with all major sectors of new construction contributing to a widespread advance over the comparable months in 1961."

Still another yardstick of new construction is *Engineering News-Record's* continuing "Backlog of

Proposed Engineering Construction," which in June of this year showed an increase of \$1.72 billion over June of 1961 (see table).

All of the above considerations point to an optimistic outlook short-range, or through 1963, for new construction activity, but does not indicate that construction will reach boom proportions. Instead, it would seem that sound, conservative growth in construction is assured for the next 15 months, provided there is no spectacular change in the national economy.

Long-Range Outlook

For a look at new construction on a long-range basis, the Department of Commerce study, made in 1961 for the U. S. Study Commission, Southeast River Basin, is used. Covering the period of 1950 to 2000, and expressed in constant (1960) dollars, the results of this study are shown in the table "New Construction in an Expanding Economy." Summarized briefly, this study indicates that new construction will approximately quadruple over the next 40 years, by the year 2000. The study also indicates that 1960 construction dollar volume will approximately double by 1975, then double again over the 25-year period from 1975 to 2000. Growth rates for individual types of construction over this four-decade period are also shown in the table.

In the analysis of new construction on a year-to-year basis, it is common practice to use current prices for each year's volume. These prices do not reflect true new construction growth, since current prices inject any inflation, or dollar devaluation which may occur. In order to determine the physical volume of new construction, it is necessary to express volume in a constant dollar. This has been done in the chart, titled "Growth of New Construction," for the 12-year period of 1950 to 1962, with physical volume expressed in constant (1947-49 = 100) dollars. As will be noted in this chart, new construction physical volume made a sizable jump in 1959, then declined in 1960, and is only exceeding the 1959 volume as of 1962. The same chart also shows construction

1962 LIGHTING EQUIPMENT DOLLAR VOLUME

Used for General Lighting Purposes*
(Thousands of Dollars)

Type of Construction Where Used	Value**
TOTAL NEW CONSTRUCTION	\$541,291
PRIVATE CONSTRUCTION	\$392,649
Residential building (nonfarm).....	142,970
Nonresidential building (nonfarm).....	217,199
Industrial.....	53,508
Offices, warehouses and loft buildings.....	59,375
Stores, restaurants and garages.....	52,350
Other residential buildings.....	51,966
Religious.....	18,000
Educational.....	11,016
Hospital and institutional.....	15,750
Social and recreational.....	4,950
Miscellaneous.....	2,250
Farm construction.....	3,413
Public utilities.....	28,275
Telephone and telegraph.....	12,900
Other public utilities.....	15,375
All other private.....	792
PUBLIC CONSTRUCTION	\$148,642
Residential.....	3,325
Nonresidential building.....	85,927
Industrial.....	5,364
Educational.....	51,450
Hospital and institutional.....	6,860
Administrative and service buildings.....	15,503
Other nonresidential building.....	6,750
Military facilities.....	4,500
Sewer and water systems.....	1,290
Public service enterprises.....	2,000
Conservation and development.....	700
Highways (includes street lighting).....	49,700
All other public.....	1,200
MODERNIZATION (relighting)	60,000
TOTAL LIGHTING	601,291

* Does not include searchlights, automotive, aircraft or railway coach lighting, residential portable lamps, and similar types of lighting equipment not associated with building construction.

** Based on manufacturers' selling prices. El. C. & M. estimate, mid-1962, based on Dept. of Commerce forecast for 1962 new construction at mid-1962.

growth over the same period, expressed in current prices.

Another strong growth factor which is also improving the market for electrical construction work and electrical products is that of spending on new plant and equipment. Data on this factor are given in the chart on "Capital Spending By Business." Note that the previous record of expenditures was

made in 1957, at \$37.0 billion, and that spending in 1958 dropped 17½% from that record. An increase is expected this year of about 8% from 1961's \$34.4 billion. Under Administration sponsorship, Congress has under consideration a tax revision bill which would provide 7% investment credit, designed to spur capital spending. Currently, the outlook for capital

spending next year is for a continuation at about the same pace as for this year. Businessmen declare that a more favorable attitude toward business by the Administration and by the Federal government would help to keep capital spending going on its own.

Residential Construction

The most active year in residential construction in the postwar era was 1950, when new business starts totaled almost 1.4 million units. The dollar value of this construction was slightly under \$12 billion. Since 1950, housing starts have varied from just above a million units to 1.3 million units annually. In 1959, a new statistical series was begun, which also includes Alaska and Hawaii, and new starts peaked at 1,553.5 thousand units that year. The two years since have shown declines from the 1959 record.

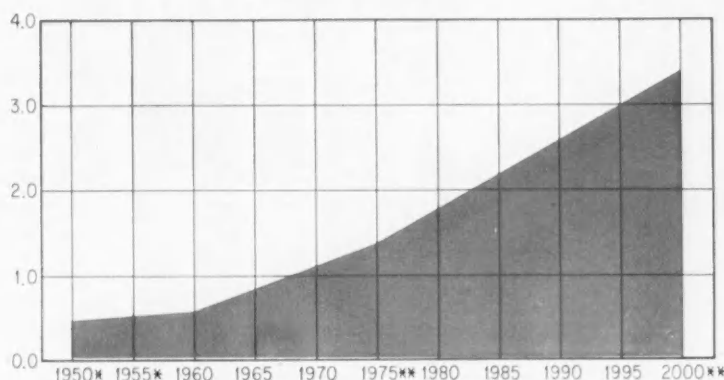
Department of Commerce has forecast a total of 1,475 thousand housing starts for 1962, of which 1,425 thousands units will be privately financed, and 50 thousand units will be publicly financed. Housing dollar volume forecast for this year will total about \$17.9 billion, or nearly 50% more than in 1950. This higher dollar volume in 1962 represents price increases and indicates that larger and better houses are now also being built.

Residential construction is expected to carry over at its present high level into 1963, in view of the general adequacy of mortgage funds at current interest rates, and a continuing demand for new homes in most parts of the nation.

The growth of residential construction over the past 12 years is outlined in the chart on "New Housing Starts," and the table, showing "Growth of Residential Construction." In the table, dollar volume (in current prices) for "new dwelling units only" is shown in the first column, and dollar volume for all types of nonfarm residential buildings, including additions and alterations, and non-housekeeping (dormitories, motels, hotel, etc.) is given in the second column. A check of "Residential buildings" and the three subheads under it, in the table "1962 Outlook For New Construction" will give the values for 1960 and 1961, and the forecast for 1962.

LIGHTING EQUIPMENT DOLLAR VOLUME 1950-2000

(Used for General Lighting Purposes on New Construction Only)
(Billions of 1960 Dollars)



* Volume in current prices adjusted to 1960 dollars.

** E. C. & M. estimate, based on forecast for new construction dollar volume by BDSA, Dept. of Commerce, as of mid-1961.

The Lighting Industry

The quantity of lighting equipment which will be sold and installed this year is estimated at slightly more than \$600 million (see table, "1962 Lighting Equipment Dollar Volume"). This is an increase over 1961 of only 3.5%, yet new construction is expected to increase about 6%. This difference in percentage increase is caused by the "mix" of types of construction, and variations in growth relationships from year-to-year. For example, residential building in 1962 will show an increase of 10% over

1961, while industrial construction is expected to decline about 6%, and educational construction may dip about 2%. From the standpoint of both electrical construction work, and lighting equipment sales, residential construction carries only a low percentage of market potential in relation to the building dollar volume. On the other hand, industrial and school construction both involve a relatively high percentage rate for electrical work and lighting equipment, in relation to total construction costs. Thus the healthy increase in residential

construction adds only a small increase in lighting equipment dollar volume, while the declines in industrial and school construction dollar volume result in a sizable decline in lighting equipment dollar volume.

Lighting Standards Up

Lighting standards have been increasing steadily in the postwar years, and received a strong boost in 1958 when the Illuminating Engineering Society approved and adopted a new set of lighting levels for all visual tasks, which were considerably higher than the previous official IES lighting level recommendations. Industry has been recommending and installing these higher lighting levels wherever possible; however, many lighting installations continue to go in now which are still below the 1958 IES recommended practices. There are three types of construction, particularly, where current general lighting practice is not equal to the 1958 IES recommendations. These are: 1) offices, especially speculative type office buildings; 2) schools; and 3) stores. On the other hand, industrial plants generally install lighting which meets, and in many cases exceeds, IES recommended levels. Under the impetus of the Medallion Home program, much better lighting is now being installed in homes than was true only three or four years ago. However, even the improved lighting going into Medallion Homes is still far below the type and quality of lighting which people need to live with comfortably in their homes.

The seven big markets for lighting today are: residential, industrial, offices, stores, schools, streets and highways, and outdoor floodlighting and area lighting.

The Department of Commerce's long-range forecast for new construction, from 1960 to 2000, has been used as a basis for a long-range prediction on lighting equipment sales. This forecast is given in the chart on "Lighting Equipment Dollar Volume—1950 to 2000." While the forecast for new construction is for a quadrupled market by the year 2000, the forecast on lighting equipment volume is that it will be on an annual rate by the year 2000 approximately six times as great as in 1960.

DOMESTIC SALES OF ELECTRIC LIGHT SOURCES

Used for General Lighting
(Thousands of Dollars)

Year	Dollar Value*			Total
	Incandescent	Fluorescent	Mercury	
1950.....	110,703	53,168	4,659**	168,530
1955.....	137,031	66,969	4,805	208,805
1960.....	196,524	109,653	13,804**	319,981
1961.....	200,317	111,418	12,953	324,688
1962***	57,945	30,357	3,433	91,735

* Value of lamps shipped by manufacturers, at manufacturers' selling prices.

** For 1950 and 1960 includes sodium, photo-chemical, and other miscellaneous electric discharge lamps. Data not available for mercury lamps separately.

*** Shipments by manufacturers for 1st quarter only, not adjusted for seasonal variations.

Source: Census Bureau, Dept. of Commerce.

Electric lamps are sold not only for new lighting installations, but also for replacement in the millions of old lighting installations. Some idea of the growth of sales of electric lamps, in dollar volume, is given in the table "Domestic Sales of Electric Light Sources." In 1961, the total market was divided among the three major types of lamps, as follows: incandescent—62.6%; fluorescent—34.4%; and mercury—4.0%. Incandescent lamp sales continue to outpace fluorescent lamp sales, even though the fluorescent lamps are nearly three times the electric power capacity of the continued popularity of the incandescent lamp is that it is still the popular light source for home lighting. Mercury lamp sales are on the increase, and spectacular growth for this lamp is expected over the next few years.

Electric Utility Industry

Electric power is the basis for any modern industrial society. It is one of the major factors that has made it possible for America to lead the world in the production of goods, and to enjoy the world's highest standard of living.

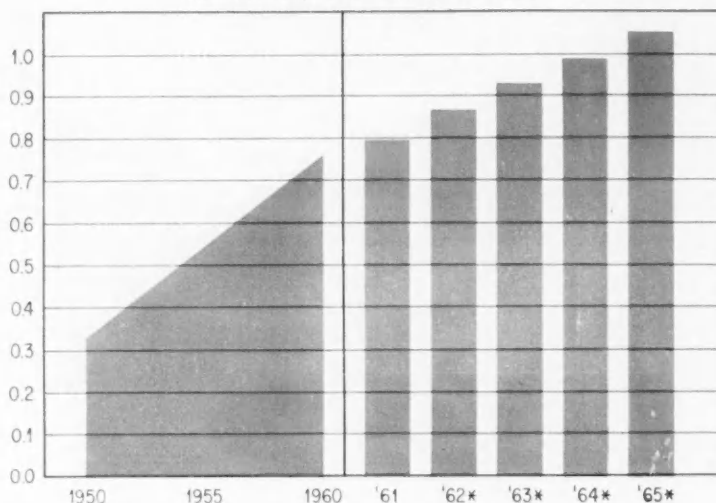
The United States has three times the electric power capacity of its next closest rival, Soviet Russia, and more power than the next five countries of the world combined. With only about 6% of the world's population, this country accounts for about 40% of the world's electric energy production. Power facilities currently represent an investment of over \$50 billion, for investor-owned companies only which accounts for approximately 80% of our total power facilities.

New plant and equipment spending in the electric utility field over the past eight years has averaged about \$3.2 billion annually. Installed capacity by the end of this year will total about 200 million kilowatts, and present plans call for increasing this capacity to 232 million kilowatts by the end of 1965 (see chart "Electric Power Generating Capability in U.S."). Annual output of electric energy in 1962 is forecast at 867 billion kwhr, and is increasing about 7% per year on the average.

In the table "Total Electric Energy Sales in U.S.," the growth

ELECTRIC POWER OUTPUT IN U.S.

(Annual output in Trillions of Kwhr)



* Forecasts by Electric Power Survey Committee of Edison Electric Institute, as of April 1962

Source: Federal Power Commission and Edison Electric Institute

TOTAL ELECTRIC ENERGY SALES IN U. S.

Year	Total Kwhr*	Total Customers**	Total Revenues***	Average Revenue Per Kwhr****
1950.....	280.5	45.0	\$5,086	1.81¢
1955.....	480.9	52.6	8,020	1.67
1960.....	683.2	58.9	11,516	1.69
1961.....	720.7	60.1	12,169	1.69

* Billions of kwhr.

** Millions of ultimate customers.

*** Millions of Dollars.

**** Cents per kwhr.

Source: Edison Electric Institute.

ELECTRIC ENERGY FOR RESIDENTIAL CUSTOMERS

Year	Total Energy Sales*	Average Kwhr per Customer**	Average Annual Bill/Cust.***	Average Cost per Kwhr****
1950.....	70.1	1,845	\$53.14	2.88¢
1955.....	125.4	2,773	73.48	2.65
1960.....	195.6	3,851	95.12	2.47
1961.....	208.2	4,016	98.39	2.45

Note: Data for 1960 and 1961 excludes Alaska and Hawaii.

* Billions of kwhr.

** Kwhr per year.

*** Average annual cost in dollars.

**** Average unit (kwhr) cost in cents.

Source: Edison Electric Institute.

of electric power customers, electric energy sales, and electric energy revenues can be seen for the period of 1950 to 1961. Over this same period, the annual revenue per kwhr decreased from 1.81 cents to 1.69 cents, or 6.6%.

One of the important customers for electric energy is the residential user of electric power. Total energy sales over the 11-year period from 1950 to 1961 increased about 97%, or over 8% annually, average. The use of electric energy per customer during this period increased from 1845 to 4016 kwhr annually. The average cost per kwhr to residential customers declined, from 2.88 cents per kwhr in 1950 to 2.45 cents per kwhr in 1961.

America's demand for electric power continues to increase, year after year. The electric utilities companies have done an excellent job of planning the needed capacity, and having it installed and available when and where the customers want it.

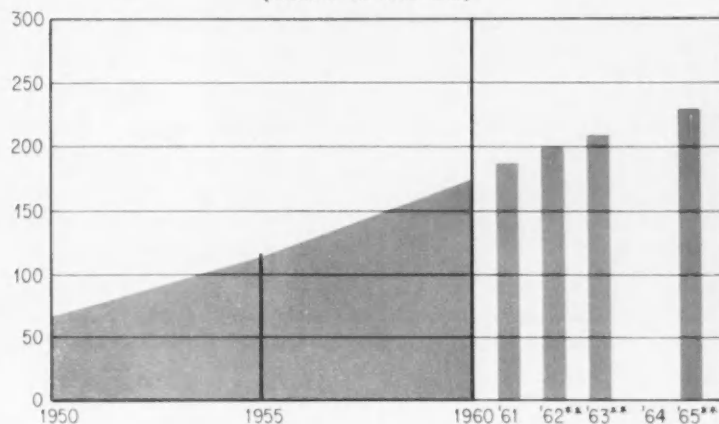
Electric Heating

There are currently 1,200,000 electrically heated homes in the United States, according to the National Electrical Manufacturers Association. By the end of this year, the total is expected to be 1.5 million; 2.5 million by 1965; and by 1970 about half of all new homes will be electrically heated, NEMA predicts. The installed value of the permanent-type residential electric heating now in use exceeds \$1 billion, it is estimated, while the value of supplementary electric heating units (for bathrooms, attics, basements, extensions and similar locations) is even higher.

The value of shipments of electric heating equipment for 1959, 1960, and the first half of 1961 is given in the table "Electric Comfort Heating Equipment." These data, collected by BDSA, Dept. of Commerce, indicate that annual dollar volume is running at \$28 to \$33 million, for equipment only, uninstalled.

Electric heating equipment also finds wide usage as an industrial commodity, for production processes requiring heat. While there are several types of industrial heating equipment using other means of heat than electricity, the electrically powered industrial heating

ELECTRIC POWER GENERATING CAPABILITY IN U.S. (Millions of Kilowatts)



* Installed capacity as of December 31.

**Forecasts by Electric Power Survey Committee of Edison Electric Institute, as of April 1962

Source: Federal Power Commission and Edison Electric Institute

systems are growing in popularity and use. Data on the total market are shown in the table "Industrial Heating Equipment Volume."

Electrical Progress

The research and development work going on in the laboratories of the electrical industry is a potent factor in industry growth. It insures new and better products, geared to today's new needs. Fortunately, considerable research in other fields, such as space exploration, and military requirements, is being carried out in electrical laboratories, which will eventually also aid in furthering electrical progress.

Consider the telecommunication relay satellite "Telstar," for example, which was put into orbit in July of this year. This 170-lb satellite is crammed with electronic devices, and opens a whole new era of worldwide communications. While each electronic device performs a specific function, there will undoubtedly be many by-products from the research which led to the final development and launching of this highly successful experimental device.

Consider also the laser, or light amplifier (light amplification by simulated emission of radiation). This brand-new device is a sensation in the scientific and industrial world, which can only begin to

mark out the limits of its potential. It has sophisticated uses for the near future, and opens up new areas of pure science to explore. Essentially, the laser provides the same control of light waves that has been common practice with radio waves. In other words, the laser makes light waves "coherent," rather than a hodgepodge that it is normally. Already, hundreds of companies are investigating the laser, which embraces the electronics field, as well as optics and other fields. It is already one of the significant inventions of the century, and by-products of its research will undoubtedly be spectacular. Its own potential is only beginning to be imagined.

Another trend of importance to the electrical industry is the miniaturization of electronics components, and the expanding use of semi-conductor devices. A variable revolution is shaping up in this area.

Research is now being pressed into new means and methods of converting fuel into energy. This interest stems from the never-satisfied appetite of the electric utilities for new methods of producing energy. Currently under study and development are new types of generators, able to convert heat and chemical energy into electricity directly—and improve the efficiency of power production still further. In general, there are four prime

ELECTRIC COMFORT HEATING EQUIPMENT VOLUME

(Value* of Shipments)

Type of Equipment	Total Value* (1,000 Dollars)		
	1959	1960	1961**
Baseboard ^(a)	8,789	8,861	4,320
Convectors: ^(b)			
Without fan	5,068	2,984	1,442
With fan	2,535	3,365	1,561
Radiant panels ^(c)		645	256
Radiant reflectors ^(d)		1,560	703
Radiant glass panels	1,815	1,711	786
Unit heaters ^(e)	4,731	5,706	2,870
Warm air furnaces:			
Central	92	370	347
Floor	52	71	29
Wall	2,682	2,474	1,013
Duct		255	191
Cable heating systems:			
Cable only	467	674	339
Room units	1,327	1,092	454
TOTAL	27,558	29,768	14,311

* At manufacturers' selling prices.

** January-June 1961 only.

^(a) Excluding glass panel type.^(b) Including ceiling or wall mounted, excluding glass panels.^(c) Except glass.^(d) Ceiling, pendant or wall mounted.^(e) Commercial and industrial, and unit ventilators—all types.

Source: Dept. of Commerce, BDSA.

areas of development under way: *Thermoelectric*—electricity produced directly from any type of heat source through heat-simulated action in small blocks of semi-conductor alloys; *Thermionic*—electricity is generated directly from heat by means of a gas-filled tube in which electrons boil off from a heated cathode; *Photovoltaic*—a thin layer of a photo-sensitive material in a solar cell converts light to electrical energy; and *Fuel Cells*—electrical energy is delivered directly from continuous chemical reaction of air or oxygen with various fuels in packaged devices that resemble storage batteries.

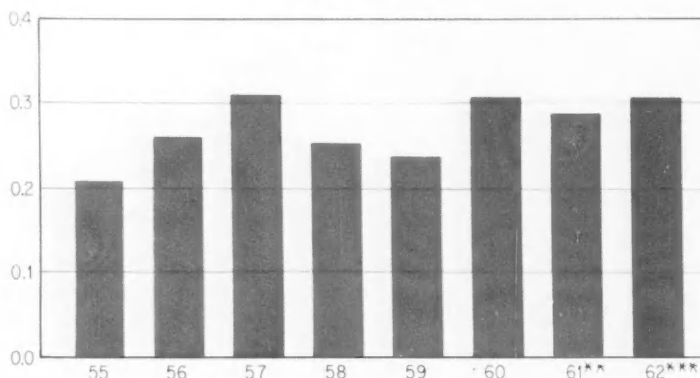
The practicability of some of these processes already has been proven. Solar cells, thermionic and thermoelectric converters are being used and designed into space satellites. One manufacturer has introduced two thermoelectric consumer items: one, a 2-cu-ft capacity refrigerator; the other, a room air-conditioning system for cooling or heating. It would appear that the next major step in air conditioning progress might involve this thermoelectric principle.

The Outlook

Currently, technological developments in the electrical industry are many, and will undoubtedly have a broad impact on the industry in the years ahead. Electrical industry markets and growth, however, depend upon a healthy and growing economy for its own strength. In general, it would seem that the short-range outlook for the economy is for a continuation on a high plateau, with neither a boom nor a depression indicated. With new construction activity showing some strength, and with technological developments helping to advance electrical standards, the outlook for the electrical markets, short-range, is for sound growth.

There are no valid signposts on which to base a long range forecast for electrical markets at this time. However, here too, the average growth trends for various economic factors would seem to indicate that the economy will continue its general upward climb, even if altered from time to time by cyclical variations.

INDUSTRIAL HEATING EQUIPMENT VOLUME

(Value* of Shipments)
(Millions of Dollars)

Note: Industrial heating equipment includes furnaces and ovens, dielectric and combustion equipment, atmosphere gas generators, and other equipment.

* At manufacturers' selling prices.

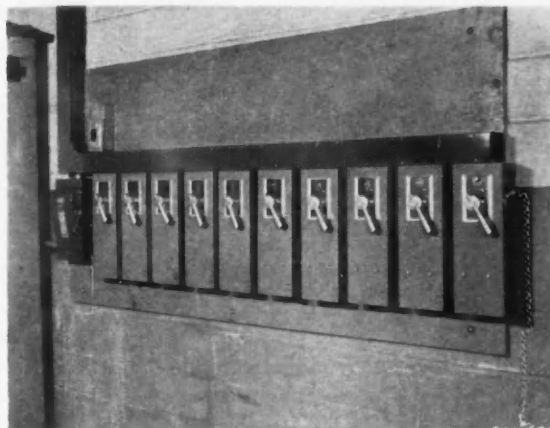
** Estimated, as of December 31, 1961.

*** Forecast, as of January 1962.

Source: Dept. of Commerce, BDSA.



A TYPICAL installation of starters and disconnect switches.



A TYPICAL installation of combination starters and disconnects.

Selecting Motor Control Systems

Use of plain starters, combination starters and control centers is compared in an objective case study. The author discusses comparative costs and other practical considerations.

By William H. Younger, Allen Bradley Co., Milwaukee, Wis.

A GOOD many years ago, when belt drives were replaced by individual motors driving specific loads, plain starters were used and mounted at the location of the motor to be controlled. A disconnecting means was also mounted near the starter. Later, as safety and convenience of installation were stressed, combination starters were introduced to the market which combined both the disconnecting means (either circuit breaker or switch type) with the starter in a single enclosure. Still later, the desirability of grouping controls for a given production area led to the development and introduction of control centers which were really the compact floor mounted assembly of standard combination starters and other associated motor control devices.

The gradual evolution of these three separate and distinct types of motor control systems has led to a certain amount of confusion in the minds of consulting engineers, contractors, and users of motor control. Naturally, each type of system has certain advantages and disadvantages over the other. And although there has been a considerable amount of literature and publicity available on any one of these systems, there has been little, if any, information brought forth which compared one system against the other on a specific job.

Therefore, when we decided to make an objective study on this subject to compare the three motor control systems, it seemed best to start from "scratch," selecting an actual job and working out the total cost picture for material and labor.

Initially, we thought we might take an area of our own shop and work with this as a basic layout. However, tempting as this was because of its convenience, we discarded the idea because we felt to be truly objective in our study we should take an actual installation—a specific job that had been designed and purchased in the past.

Such an installation was found. It was an industrial building consisting of a basement, first floor, and second floor. Each floor had a variety of motor loads and represented different problems of layout and motor control application. The system was 3-phase, 440 volts.

With this basic information in hand, we approached an independent consulting engineer and asked for his assistance. We asked that he lay out each of the three floors

TABLE A—Material Cost

FLOOR	CONTROL CENTER	GROUPED COMBINATION STARTERS	INDIVIDUAL COMBINATION STARTERS	
			FED FROM PANELBOARD	FED FROM BUS DUCT
BASEMENT	\$2817	\$1990	\$1946	\$2438
MACHINERY	\$4228	\$3085	\$2975	\$3634
LABORATORY AND OFFICE	\$2828	\$1930	\$1995	\$2589
TOTALS	\$9873	\$7005	\$6916	\$8661

TABLE B—Labor Cost

FLOOR	CONTROL CENTER	GROUPED COMBINATION STARTERS	INDIVIDUAL COMBINATION STARTERS	
			FED FROM PANELBOARD	FED FROM BUS DUCT
BASEMENT	\$1542	\$1673	\$873	\$1471
MACHINERY	\$2561	\$2797	\$1321	\$1845
LABORATORY AND OFFICE	\$1603	\$1751	\$1061	\$1506
TOTALS	\$5706	\$6221	\$3255	\$4822

using the following motor control systems:

1. Using NEMA Class I Type A plug-in control centers having circuit-breaker combination starter plug-in units.

2. Grouping circuit-breaker combination starters at one location and controlling individual motors from that one area.

3. Mounting individual circuit-breaker combination starters at each motor location and feed these dispersed loads from a power panel.

4. Mount individual circuit-breaker combination starters at each motor and feed these individual loads from bus duct overhead.

The basement had ten different motor loads with horsepower ratings $\frac{1}{2}$ hp up to 30 hp. Motors were for bilge pumps, hot water pumps, sewerage pumps, fans, compressors, refrigeration unit, and an overhead door. Loads were widely dispersed—often in different rooms.

The first floor was a machinery floor having 18 different motor loads. Fourteen of these motors were reversing applications on production machines rated $7\frac{1}{2}$ hp. The remaining motors varied from $\frac{1}{2}$ hp to 1 $\frac{1}{2}$ hp and were for unit heaters and fans.

The second floor was a laboratory and office area having 11 motor loads—mostly in the 3 hp and 5 hp range for small machines. One 35-hp elevator motor was also to be controlled. Motors were again widely dispersed.

Estimating each of these three floors with the four different control system possibilities mentioned above gave us 12 areas of information for comparison purposes. The tables which follow give complete data regarding all material as well as labor required for the total installation of such material. Detailed estimating sheets were maintained and no item of expense was overlooked—regardless of how small it seemed. Nickels and dimes can add up rapidly. We wanted the study to be as complete and fair as possible.

In pricing material, a similar primary discount schedule was used on all items to place them on a comparable basis. It was decided that this would give a better picture than list prices which would be inflated. Thus, we are dealing with realistic purchase values as seen in today's market.

With regard to labor costs, standard units were applied and

extended to give us total amounts, and these were translated into total dollar figures by applying a value of \$5.50 per hour. Although this figure is arbitrary, it seems to represent a sound average in the light of today's published figures across the country.

When we first began this study, we talked with a number of people who had very strong personal opinions as to which control system would be most expensive. For example, one capable engineer said flatly that control centers cost three times as much as plain starters. When we asked him to describe what he meant by "three times as much" as it related to material, or labor, or both, he really did not know. In other words, he was expressing a general "rule of thumb" which apparently he had applied over the years without much basis in fact. It may have been that on one particular job his very general statement was true, but many factors may have contributed to this example which he was continuing to hold forth as a basic truth.

In our study, we emphasize the fact that we are trying to draw only broad conclusions by analyzing in detail a very specific job. The figures developed in Tables A through D tell the story.

In Table A we have compiled the material cost—involving all of motor starting equipment, wire, conduit, connectors, boxes, straps, and even bolts. On each of these floors and in the total job, the control center system was the most expensive. This is logical since the control center itself comprised 70 to 75% of the total material cost on any given floor. The bus duct system feeding individual combination starters was second highest in cost. It is interesting to note that the bus duct itself was a significant factor—between 30 and 40% of the material cost on each of the floors. The grouped combination starters ranked third in material cost and the individually mounted combination starters fed from a panelboard ranked fourth.

The comparison of labor cost shown in Table B presents quite a different picture from the material cost analyzed previously. Note that the two installations involving the grouping of controls—grouped combination starters and control centers are both more expensive than the feeding of individual combina-

tion starters from panelboard or bus duct. This is quite logical since in the grouping of motor controls at one location, almost twice as much wiring is involved as the control and power wires are taken from the centralized control point out to each motor. In addition, the wiring is heavier—thus adding to the labor cost. From the point of labor installation cost, the grouped combination starters are most expensive with the control center ranking second. Again an effort was made to include all elements of labor cost. For example, in the control center allowance was made for cartage, setting, and leveling the control center. The bus duct and individual combination starter system ranked third. The labor cost of installing the bus duct is relatively high but additional motors can be added at fairly low cost. Saying it another way, the cost per motor additional decreases rapidly once the bus duct system is installed because there is available power close to the motor to be controlled. This is in contrast to the control center and grouped combination starters where a relatively constant additional cost per motor is involved when additions to the load are made.

Table C gives us a consolidation of both the material and labor cost for the four different control systems applied to each of the three floors. It can be quickly observed here that although the control center system is the highest of the four and the individual combination starters fed from a panelboard is the lowest, the grouped combination starters and bus duct feeding individual starters are about a "stand off" in combined costs due to the higher labor cost for one and higher material cost for the other. It takes more labor to install the grouped combination starters but the material cost for the bus duct system is higher—thus effecting the balancing out. Naturally, these figures could change for any given floor installation due to the number and grouping of the motors on that particular floor.

At this point in our study we turned our attention to plain magnetic starters with separately mounted disconnects adjacent to each starter. Although we had thoroughly compared centralized versus dispersed control in terms of control centers and combination starters, it remained to observe the role of the plain magnetic starter

and its comparison with the other systems.

Up to this point, we have been dealing with circuit-breaker units both in the control center and in individual combination starters. However, because most plain starter installations with separate disconnects utilize a safety switch, this seemed to be the most realistic approach to the problem. Nevertheless, to avoid comparing "apples and bananas" we decided to compare the circuit-breaker combination starters previously discussed with plain starters and safety switch disconnects and also insert fusible combination starters to complete the picture. This information is given in Table D where complete material and labor costs are tabulated.

Starting with the grouped circuit-breaker combination starters tabulated previously, similar data were developed for the fusible combination starters. A reduction of approximately 10% in total cost was noted. Then, pursuing the same reasoning with plain starters and safety switches, another total cost is developed which again represented a decrease of approximately 10% below the fusible combination starter cost. Certainly, this lower cost is arrived at through the sacrifice of a number of installation features including safety, compactness, and appearance.

At the same time that we were making this detailed analysis of one specific installation in an effort to come up with some cost figures, we made a special effort to visit as

TABLE C—Material and Labor Cost

FLOOR	CONTROL CENTER	GROUPED COMBINATION STARTERS	INDIVIDUAL COMBINATION STARTERS	
			FED FROM PANELBOARD	FED FROM BUS DUCT
BASEMENT	\$4359	\$3663	\$2819	\$3909
MACHINERY	\$6789	\$5882	\$4296	\$5479
LABORATORY AND OFFICE	\$4431	\$3681	\$3056	\$4095
TOTALS	\$15579	\$13226	\$10171	\$13483

TABLE D—Material and Labor Cost

FLOOR	COST	CIRCUIT-BREAKER COMBINATION STARTERS	FUSIBLE COMBINATION STARTERS	PLAIN STARTERS AND DISCONNECTS
BASEMENT	LABOR	\$1673	\$1673	\$1735
	MATERIAL	1990	1819	1562
	TOTAL	\$3663	\$3492	\$3297
MACHINERY	LABOR	\$2797	\$2797	\$2944
	MATERIAL	3085	2722	2227
	TOTAL	\$5882	\$5519	\$5171
LABORATORY AND OFFICE	LABOR	\$1751	\$1751	\$1801
	MATERIAL	1930	1706	1415
	TOTAL	\$3681	\$3457	\$3216
TOTALS	LABOR	\$6221	\$6221	\$6480
	MATERIAL	7005	6247	5204
	TOTAL	\$13226	\$12468	\$11684



A TYPICAL motor control center.

many installations across the country as possible. Many of these users had purchased control centers; others had gone to one of the other systems described. In each case our questions were directed toward finding out why the selection had been made and what factors had influenced the purchase.

It soon became very obvious that the analysis of installation cost was only one consideration involved in the purchase of a system—and sometimes a minor one at that.

Because ten such influencing factors were noted most often, they are worthy of review. Here they are:

1. Environment of the installation has a big bearing on the selection of the system. As one food processing plant engineer said to me, "They are constantly hosing everything down in this plant and I can't afford to have them get any water into my motor control equipment so I move it into another room." This problem is not only limited to food processing plants, dairies, or breweries but is also a common problem in paper mills and steel mills. Dust or dirt in the air, corrosive fumes, or water and other liquids can play havoc with the electrical equipment, and oftentimes the best answer is to move the control outside the production area into a dry, clean environment. This thinking automatically rules in favor of consideration of grouped controls such as a control center or grouped combination starters.

We observed one paper mill that had a highly corrosive atmosphere. They had placed control centers in a separate room which was pressurized with special filters to avoid the problem of static corrosive air and to keep dirt and dust out. This problem, incidentally, of filtering the air is not an easy one to solve.

2. Electrically interlocked process machinery requires a great deal of interwiring between the various motor controllers. In many of these installations the operator may press a single button and the complete line, consisting of many motors, begins to operate at once. Naturally, the electrical interlocking of many motors with the attendant complicated interwiring means that a man in one of these plants would be very favorable to grouped control where this wiring could be performed more easily—not only initially but later during maintenance. A great many chemical plants face this type of problem, and it certainly influences their selection of motor control.

3. Close supervision of production is required in costly and complicated manufacturing processes. An electronic device manufacturer told me, "It would be ridiculous for me and my men to have to run around to all of the many machines and pieces of equipment in my plant to observe that everything is going along right. We want all our control in one place so that the one man who is responsible can keep an eye on the complete operation with-

out running himself silly." Here again the grouping of control with appropriate pilot lights and accessory devices will give maximum supervision with greatest efficiency.

4. Installation of equipment brings on many problems which naturally vary from one user to another, but his view of these problems may influence his selection. By way of example, one chief engineer told me that he had a stable and fairly small electrical group operating in his plant, and he preferred to keep it of a given size. Although he didn't want to expand his crew, he realized that he had some electrical expansion work to do and, therefore, he was interested in "buying labor" wherever possible. This man preferred control centers because, as he put it, "The manufacturer does a lot of my work ahead of time in a control center. He does all the interwiring and makes the job easier for me to finish off." This installation consideration was a definite influence on this customer's buying decision.

5. Maintenance expense is certainly a part of the over-all picture considered by most users. Although all users are concerned about maintaining their equipment, the difference in downtime cost makes some far more aware of this than others. The man who has no particular difficulty in shutting down one or two of his production machines and working on them while the others continue to operate looks at the selection of a system and its maintenance one way. But the man who must shut down his complete production facility if just one machine needs repairs looks at the selection of his system in quite a different manner. In one mill, where downtime is very expensive, grouped control was preferred because there was just one spot to go to. The control centers purchased had even been outfitted with special "quick opening" door fasteners so that maintenance crews could get at any and all units with no delay in case of an emergency. The plug-in feature of control centers also appealed to this mill because individual units could be replaced most rapidly.

6. Appearance is often considered an intangible factor in the selection of an electrical control system, but our study reveals that it is becoming more and more important to buyers. We observed one large industrial plant that decided

to use a control center in a separate room and when it was realized that visitors to the plant could not see the installation, large glass windows were placed on the wall so that the electrical equipment could be shown off to visitors to better advantage. We have seen the same thing in many public buildings, where fine appearance was a significant influence on the purchaser. After all, a modern electrical control system represents a sizable investment and the buyer is not at all bashful about wanting to show this off to the public. In some cases he is actually making a "show piece" out of the motor control.

7. Space is a subject about which much has been written in recent years. We see more and more emphasis on "space shrinking" of all equipment going into a modern industrial facility. Companies are seeking more and more ways to get maximum output from available floor space. A comment made by one industrial user was probably not unusual: "Our management tells me that every square foot of this plant is worth \$2.75 a year in profit to the company. Therefore, every square foot of space that I want to use for my electrical equipment had better be justified."

Actually, the word "space" can be very misleading since it means different things to different people. One man may say that he uses combination starters grouped on a wall because it takes no floor space. The next man will tell you that he doesn't have the wall space available and, therefore, he uses control centers because they take up a minimum of floor space. Still another will tell you that he likes to mount the motor control right on the machine or near the motor because that really saves space. It all depends on the installation.

We would add one word of caution here. Some companies have become so intent on saving floor space that they have moved their motor control into inaccessible areas. Here we are not talking about a separate room but instead mounting equipment up in the rafters or down in the depths of the building in a locked room where it is not accessible in times of emergency. This is, of course, shortsighted.

The competition for available space within a plant between departments is sometimes most interesting to watch. One plant man

told me that he liked control centers because he could locate his control center very early on the production floor. He found out where major loads were going to be located—in a general way. Then he moved the control center into the plant and grouted it to the floor. "They know my mind is made up," he said, "and besides, they don't take my space away from me."

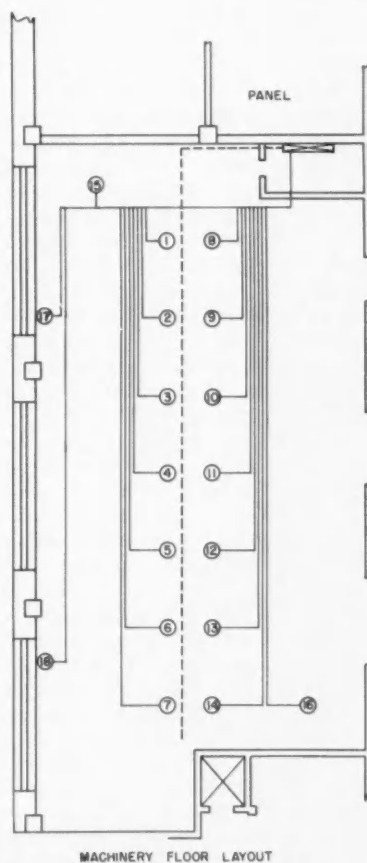
8. Future expansion certainly must be considered—particularly the way the electrical requirements in many plants have skyrocketed in recent years. Companies are constantly rearranging and improving their production facilities to improve their efficiency. It is easy to run out of space—any kind of space—in a hurry. In addition, of course, the electrical equipment must be kept conveniently located for proper maintenance.

One company we visited was particularly interested in control centers because they felt it was easiest to expand with this type of system. In many cases, in new construction, motor loads were not definitely

known and yet the electrical system had to be "tied down." This is not necessarily anyone's fault. It merely indicated that changes are taking place constantly. In the case of one industrial plant, large blank control center sections were ordered. These were located and at a later date control center plug-in units were purchased (sometimes under the maintenance budget) to match the motor requirements. This gave flexibility but did not hold up the construction job.

9. Safety is becoming increasingly important. As the tempo of work picks up and electrical loads get larger and larger, safety to all operating individuals involved is being stressed in plant after plant. Good code practice is followed and no stone is left unturned in the search for maximum safety. Generally speaking, the control center or combination starter represents a safer installation than the individual safety switch and plain starter. As mentioned previously, the growing awareness of safety helped spur the development of the combination starter a number of years ago. In any given plant, safety as an influence on the thinking of that plant depends on several factors. Accidents that may have taken place over the years, the type of processes in use, and the attitude of the management and supervisory people are all important.

10. Personal prejudice on the part of the buyer time and again was one of the most important single factors involved. We often encountered individuals who were buying a certain type of system because it was "best." As we chatted with them and began to investigate their thinking, it turned out that they were not too sure why they felt the way they did. However, they certainly had very strong feelings on the matter. For example, we encountered two very similar industrial plants, operating in the same industry and making the same product, that were located just a few miles apart. In each plant there were competent and experienced electrical engineering and maintenance personnel. However, in the first plant the customer was one hundred per cent sold on the use of control centers as being "ideal" for his installation. Nothing could be better than control center.
(Continued on page 195)



MOTOR LAYOUT on one of the three floors used in the control case study.

Independence Hall

Echoes the Past

... through sound and light

Our Country's beginning is dramatically portrayed by magnetic-tape sound-track equipment, coordinated with fixed and varying 5-color illumination. Performances are presented each evening on the historical grounds of Independence Hall. E-J Electric Installation Co., New York City, was constructing engineers for the entire project.



INDEPENDENCE HALL, as viewed from the ground, shows no evidence of fixed floodlighting units installed at many points on the exterior of the building. Accompanying photos reveal well-hidden locations of luminaires.

THROUGHOUT the years, countless daytime tourists have visited Independence Hall, one of America's most sacred historical sites. For it is this Philadelphia landmark that houses the Liberty Bell and is proudly revered as the building in which the "Declaration of Independence" was signed in 1776.

Since this last Fourth of July, however, tourists have been in for a real treat—a nighttime, outdoor historical performance viewed from the park area behind Independence Hall. This evening performance, called "The American Bell" dramatizes the events leading up to the signing of the Declaration of Independence. And the program consists of fixed and varying 5-color illumination, coordinating and functioning with magnetic-tape sound-track equipment.

Lighting and sound systems are controlled from electronic dimming and amplifying equipment, located in an underground control room. This equipment is the nerve center of the coordinated systems and, basically, operates on a 10-channel, high-fidelity magnetic-tape system which controls music, sound effects, narration, dialogue, and the elaborate lighting system in a planned programmed sequence. Most of the lighting combinations are controlled in color, intensity and position by a complex Thyatron dimming system, similar to that used in major theatrical and studio productions.

Because of the intense heat generated by amplifiers and dimmers,

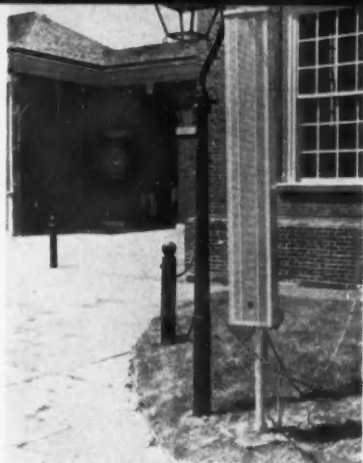
a 5-ton air conditioning unit was required in the control room to maintain normal room temperature.

From the control center, conduits extend to exterior and interior lighting units on Independence Hall and adjoining buildings. And underground cables supply fixed and portable lighting banks in the park area. Around the park area surrounding the audience, column-type portable speakers provide life-like stereophonic sound throughout the performance.

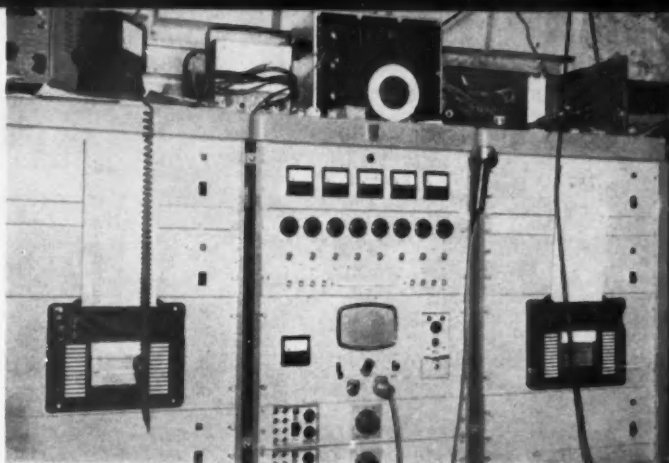
Installation Features

The E-J Electric Installation Co., New York City, served as the constructing electrical engineers for this \$250,000 project. Their background of experience in the performing arts field assisted in the coordination necessary between all departments of the federal government and the City of Philadelphia. The entire installation, including trenching and backfilling, resodding, masonry and carpentry work, and construction of park benches (ingeniously used in connection with the lighting system) was performed by E-J Electric.

Some of the important electrical specifications included: use of aluminum conduit boxes and fittings throughout the interior and exterior of Independence Hall to avoid corrosion of metallic parts; use of Type USE single- and multiple-conductor cable for all underground work; matching receptacles for plug-in lighting and speakers at

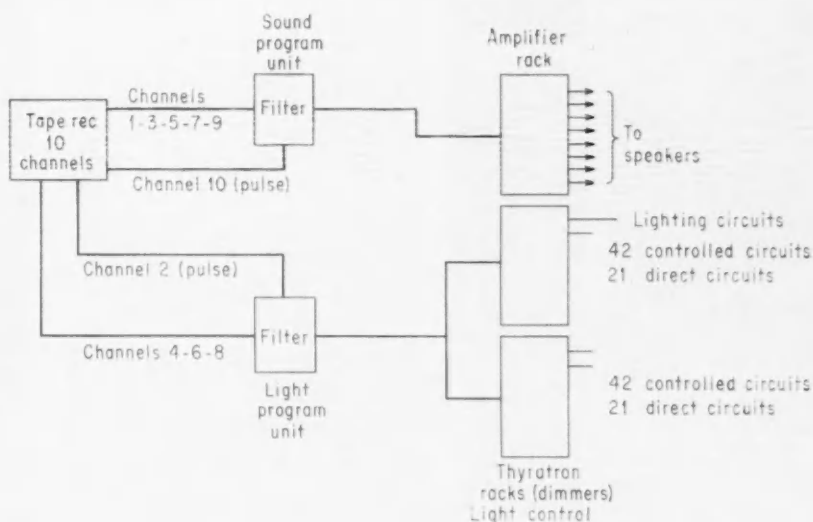


COLUMN-TYPE SPEAKERS are typical of eight such portable outdoor units which surround the evening audience in the park area of Independence Hall. During the day portable speakers are removed.



SOUND AND LIGHT are coordinated by control equipment located in an underground room. This equipment keys the lighting system to the sound production of "The American Bell," through variations of lighting intensity and color.

BASIC BLOCK DIAGRAM of sound and lighting equipment shows how the evening performance of "The American Bell" is presented at Independence Hall. The equipment operates on a 10-channel, high-fidelity magnetic-tape system which programs, music, sound effects, narration, dialogue, and the elaborate dimmer-controlled 5-color lighting system.



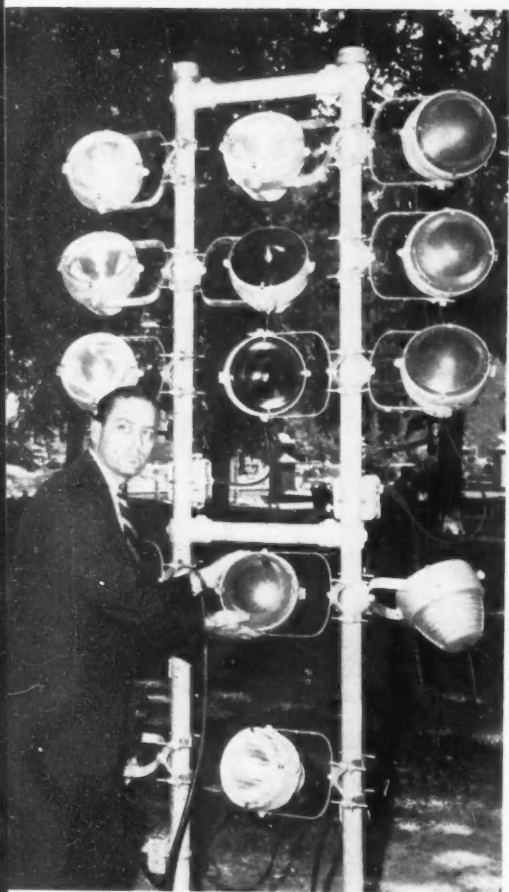
receptacle strips located inside the park benches; and automatic alignment of outdoor portable lighting standards and column-type speakers.

One of the major problems encountered was the emphatic request on the part of the National Park Service and Department of Interior that the sacred and historical grounds of Independence Hall could not be marred or littered with objectionable lighting units or related equipment which would distract from the original Colonial appearance.

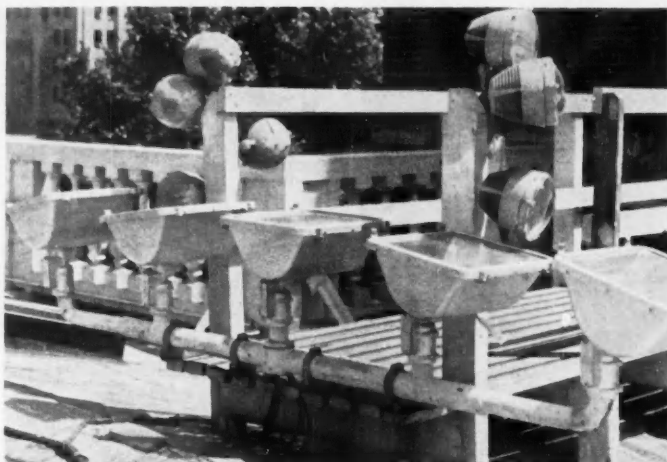
To accomplish this, many of the park lighting units are mounted in redwood park benches. These custom-designed benches have hinged fronts and seats. During the day the fronts and seats are closed and locked by key so that the public can use the benches to rest and view



PORTABLE LIGHTING STRIPS are located in small metal boxes and placed near the building face. Each strip box contains a white, red, and yellow PAR lamp to accent red brick in nighttime sound-light spectacular.



J. ROBERT MANN Jr., vice president of E-J Electric Installation Co., makes final adjustments on typical portable lighting standards installed in the park area of Independence Hall. The multi-colored lighting banks are used during evening sound-light performance to illuminate buildings.



AURORA LIGHTING EFFECT is accomplished by five 1500-watt quartz lamps (foreground) that shine up in the sky and silhouette the tower of Independence Hall. Weatherproof PAR lighting units (above quartz lamps) illuminate building surfaces. The units are located on the roof of the main part of the building and cannot be seen from ground level.



TYPICAL PERIMETER LIGHTING for illuminating building surfaces consists of weatherproof luminaires with PAR lamps. Units are carefully placed behind ornamental pieces so they cannot be noticed from ground level. Boxes and liquid-tight conduit are secured to old structure members by wrap-around straps. This prevents damage to ancient wood members.

the surroundings. For the night performance of "The American Bell," the fronts and seats are opened so that the batteries of floodlights can illuminate all of the buildings as required during the sound-light presentation. Additional floodlights, mounted on portable self-aligning stanchions and in portable strip boxes, are strategically placed around the park area. During the day all portable units are removed and stored away.

Independence Hall itself has an extensive wiring system which supplies lighting to all rooms in addition to illuminating parapets and other exterior building surfaces. Adjacent east and west wing buildings are illuminated in a similar manner, but they are also floodlighted from lighting units on the

roof of Independence Hall. As indicated in accompanying photos, all fixed lighting units on the building structures are so installed that they cannot be seen from ground level during the day. Portable lighting stanchions in front of the building and in a number of inside rooms are stored away in the daytime hours.

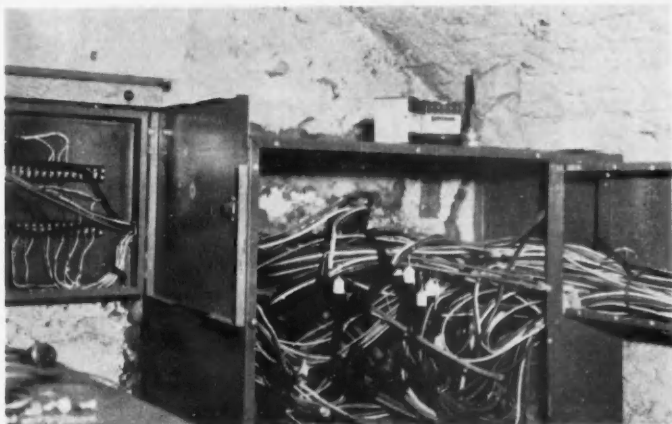
On an upper exterior section of Independence Hall, five 1500-watt quartz-lamp floodlights provide a spectacular "aurora" effect by shining up in the sky and silhouetting the tower of Independence Hall. Although used for only a short time during the performance, this lighting provides a dramatic punch at a key part of the taped program.

To produce a darkened area for outdoor audience seating at night, many of the old gas lights in the

park area have been converted to electric lamps. But to maintain the tradition of the gas lights, small 40-watt flame-shaped bulbs were selected. These lamps are also controlled from the dimming equipment in the control center.

Circuit and control wiring for sound and light program units are extended to a junction box near the control equipment where the conductors are connected to separate terminal blocks. As a result, jumpers can be easily installed should a change in script or a new script be desired in the future. Spare magnetic tape is available at the control center in case the original tape should break.

Twelve miles of wire and cable, 300 floodlights (ranging in size from 100 to 1500 watts), and eight



MAIN JUNCTION BOX for underground runs to park area from panel-board, dimmer and sound circuits is located adjacent to control equipment. Terminal blocks in the cabinet shown at the left of photo simplify connection changes for sound and lighting circuits when revisions are made to magnetic-tape recordings.



CONDUIT, BOXES AND FITTINGS used throughout Independence Hall are aluminum. This was specified because the building is not heated. Photo shows wiring in attic spaces of building.



TYPICAL CONVERSION of gas lights to electric lamps is shown as electrician completes wiring. Wires were fished up old standard and a short offset piece of copper tubing with compression connectors feed side-connected socket. The flame-type bulbs are dimmer regulated.



RECEPTACLE OUTLETS in historical rooms of Independence Hall are installed behind original baseboards. When not in use, a beveled flush wooden cover closes opening, thus maintaining the original Colonial appearance.

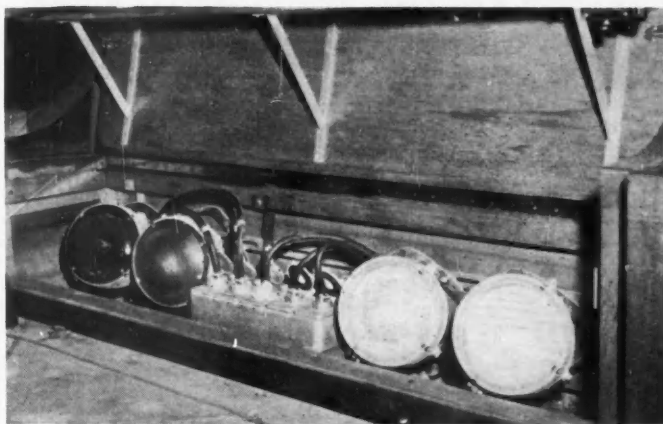


FINAL TESTS are made by E-J Electric personnel at custom CB panelboard, located behind Thyatron dimmer panel in underground control room. Wire sizes for lighting circuits range up to No. 4 because of long runs to the park area and upper parts of building.

outdoor, column-type speakers were required for "The American Bell" performance. The lighting load is about 80 kva, and the entire load for the production, including the load for dimmers, amplifiers and related equipment totals 100 kva.

The script for "The American Bell" was written by Archibald MacLeish and is narrated by actor Frederic March. Voices representing Thomas Jefferson, Benjamin Franklin, George Washington, John Adams and others were recorded by well-known actors and actresses. J. Robert Mann Jr., vice president of E-J Electric, supervised the entire construction project.

Expectations are that similar sound-light productions will be provided at other monumental sites throughout the United States.



CUSTOM REDWOOD BENCHES in the park area serve dual function. During the day, the public uses them as park benches. At night, hinged front and seat covers are opened to permit floodlights to illuminate buildings during sound-light performance. Receptacles are coded to match the appropriate colored lens.

Safety is the objective in . . .

Grounding of Plug Connections

Here's a basic rundown on the techniques of grounding plug-connected devices through effective use of grounding receptacles and plug caps on various types of wiring systems.

By William Sunter, Manager, Commercial Engineering, Harvey Hubbell, Inc., Bridgeport, Conn.

EFFECTIVE application of grounding-type receptacles and plug caps can add real safety in the use of plug-connected tools, appliances and devices. Proper plug connection can provide firm grounding of noncurrent carrying metallic parts of equipment to eliminate electrical shock hazards which arise when insulation in equipment fails.

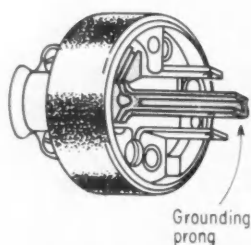
An electrical system or appliance is said to be grounded when those metallic parts of it which are not intended to carry current are connected, through a conductive material, to a water pipe or metallic electrode buried in the earth. The purpose of such a connection is to carry electricity harmlessly away if it leaks into uninsulated metal because of misuse or failure of insulating materials or energized conductors.

In the absence of such protective grounding, a

person touching the accidentally charged metal might suffer shock, severe burning, or death as a result of electricity flowing to earth through the body.

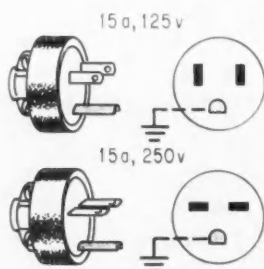
Fault currents can occur in any electrical system. But they are more common in a system in which flexible rather than fixed conductors are used, such as cord-and-plug connected devices. It is generally recognized that grounding portable equipment reduces electrical accidents. Only by properly insulating all exposed metal parts and housings is optimum protection achieved. Unfortunately, this is not always feasible because certain types of equipment would be too bulky to handle conveniently if they were protected with the ideal amount of insulation. Hence the need for wiring devices with built-in protective features.

The accompanying illustrations cover specific details on grounding through plug connections.

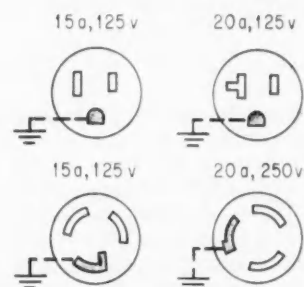


A. For the grounding of equipment operating from a flexible cord, a male attachment-plug cap is used which has one more contact blade than is required for carrying line current.

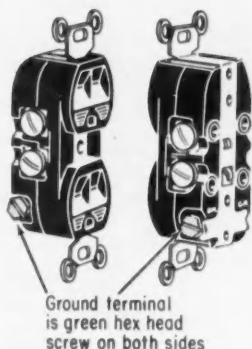
This grounding blade is longer than the others. Hence, when the cap is being plugged into a receptacle, the ground connection is established before the current-carrying blades make contact. When the cap is being removed, the current-carrying blades are disconnected first, before the grounding connection is interrupted, thereby assuring continuous grounding protection.



B. Since 1953, the current-carrying blades of grounding caps on flexible cords from equipment built for 125-volt service have been so designed that they cannot be plugged into the slots of 250-volt receptacles. Blades and slots for 125-volt circuits are parallel, whereas blades and slots for 250-volt circuits are in tandem. Special blade and slot configurations are made for 125-, 250- and 277-volt applications. Hence, equipment cannot be plugged into the wrong voltage.



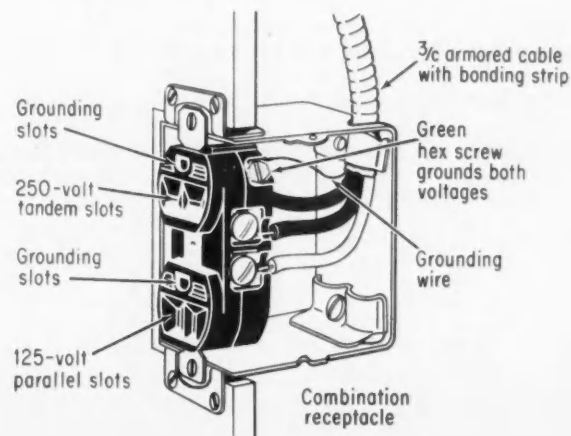
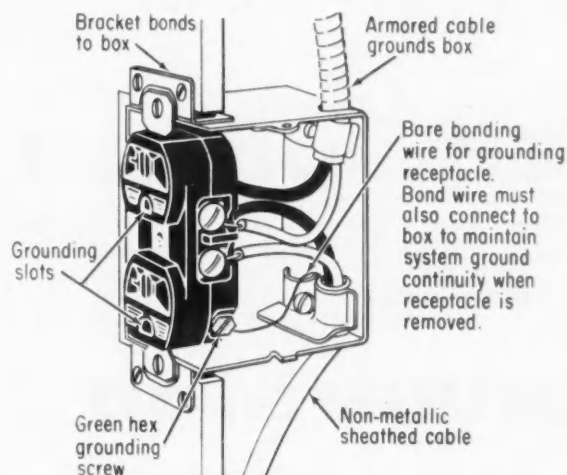
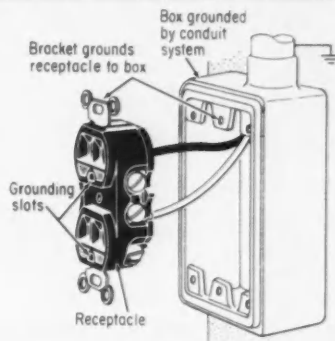
C. Special slot configurations for different amperages prevent the plugging in of equipment that would overload a circuit. Cord caps for equipment drawing 20 amps will not fit into the slots of grounding connectors rated for 15-amp service. Thirty-amp caps will not fit into the slots of 20-amp or 15-amp receptacles, and so on.



D. A receptacle with a grounding slot has a clearly identified grounding terminal, which may be connected back to the system grounding electrode in one of several ways:

1. By a separate wire from the terminal to the water pipe or other electrode.
2. By an extra wire in the cable, conduit or raceway that houses the current-carrying wires. To this extra wire are connected the grounding terminals and housings of all wiring devices back to the service-entrance ground connection.
3. By the metal shell of the wiring system itself. Flexible conduit, EMT, rigid metal conduit or the armor on armored cable, properly installed, forms a conductive contact with all metal wallboxes, junction boxes, switchboxes, and fuse or circuit-breaker panels back to the permanent service entrance ground connection. Also, the grounding terminal of the receptacle is internally connected to the metal parts (the mounting bracket) by which the device is fastened to its housing. If this housing is a metallic box already properly grounded, the receptacle itself will automatically be grounded through it.

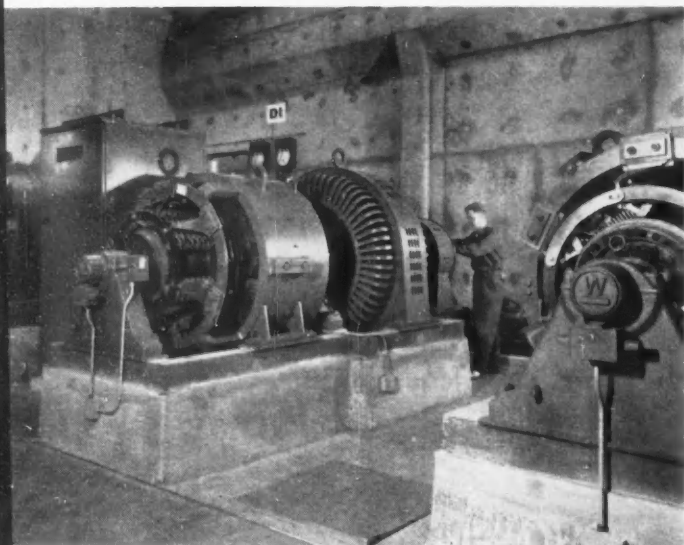
E. With a properly grounded metallic system (conduit or armored cable) receptacles are grounded through the mounting bracket which is metallically connected to the metal box which, in turn, is grounded through the metal raceway or cable armor supplying it. If it is felt necessary, an additional wire may be installed in the supply conduit to provide a separate grounding connection to the green hex head screw. Or, if the connection of mounting bracket to box is judged to be an unreliable ground connection, a separate jumper can be used from the green hex head screw on the receptacle to a solid screw connection on the inside of the box. The grounding wire is mandatory in non-metallic wiring systems.



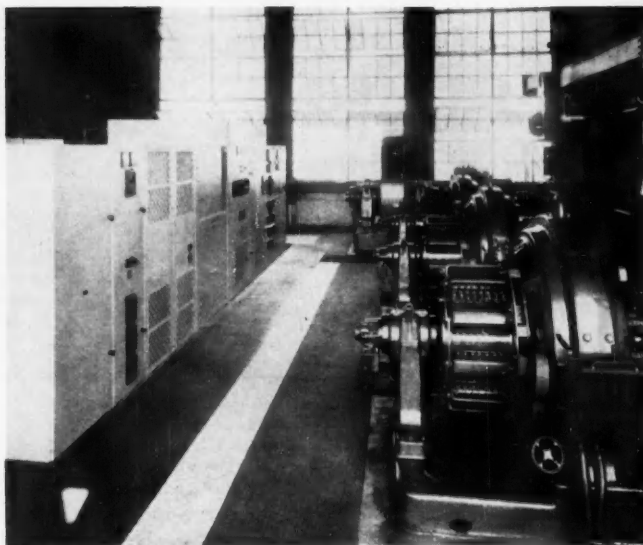
F. When a grounding receptacle is used with flexible metallic or non-metallic cable, the bare bonding or grounding wire from each cable entering the box can ground the receptacle by connection to the green hex screw. If a non-metallic box is used with non-metallic sheathed cable, the bare grounding conductor only has to connect to the receptacle grounding screw. If a metal box is used with non-metallic sheathed cable, the bare grounding wire in the cable can be solidly screwed to the box wall to ground the box and the receptacle ground connection is provided by the mounting bracket connection to the box. All cable bonding wires in any box should be spliced together to assure ground continuity of the wiring system when the receptacle is removed.

When armored cable is used, ground connections for the green hex head screw on the receptacle can be provided in either of two ways. First, the bonding strip in the cable can be wrapped back under the cable box connector with the receptacle ground connection again being provided simply by the mounting bracket in contact with the box, which is grounded by the cable armor. Or the bonding strip in the armored cable can be connected to the green hex head screw. In the latter case, there will be two ground paths from the receptacle to the armored cable: one through the bonding strip and the other through the mounting bracket to the grounded box and cable armor. In this diagram, the bonding wire from the non-metallic cable must be bonded to the box for system continuity.

G. Combination duplex receptacles have common grounding terminals. Grounding to the system is accomplished in the same manner as described previously.



MOTOR-GENERATOR SETS provide reliable service and have a proven long life. They are capable of delivering large amounts of dc power. Large motor-generator sets require massive foundations (as shown above) to prevent excessive vibration.



ROTARY CONVERTERS have a high efficiency and, like m-g sets, are capable of delivering large amounts of power. Because the rotary converter combines ac motor windings and dc generator windings on one armature, it is smaller for the same kw output, thus requiring less floor space.

For industrial service . . .

Rotating Equipment For AC to DC Power Conversion

Motor-generator sets and rotary converters—Part 1 of a 3-part series of articles which describes characteristics, operation, ratings and maintenance considerations of industrial power-conversion apparatus. Parts 2 and 3 will discuss rectifier circuits, ignitrons and silicon rectifiers in detail.

By **Charles G. Cloern**, Power Conversion Engineer, Westinghouse Electric Corp., East Pittsburgh, Pa.

EFFECTIVE selection, efficient operation and simplified maintenance of industrial power-conversion equipment require, fundamentally, a practical knowledge of the available apparatus. Providing pertinent information, this series of articles will assist designers, electrical contractors and plant electricians in their responsibilities related to equipment that converts ac power to dc.

Originally, many plants generated much if not all of their own electric power. This generated power was in the form of dc, but as loads increased it became more economical to purchase the power in the form of ac and convert it locally to dc. Motor-generator sets and rotary (synchronous) converters initially accomplished this conversion. Somewhat later, apparatus such as ignitron, selenium, and silicon rectifiers became available to provide dc power.

And the industrial uses of dc power are numerous and diverse. A conservative estimate is that 9% of all ac power generated in this country is converted to dc power for industrial uses.

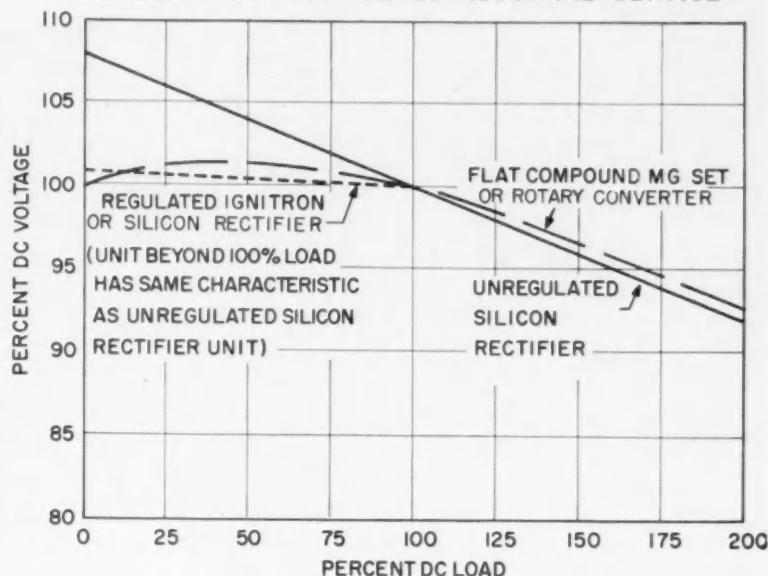
In general, there are two basic types of industrial dc systems, the constant-voltage, 250-volt, 2-wire distribution system, and the variable-voltage system, which is used extensively in motor control circuits. Conversion equipment discussed here covers apparatus related to the more common constant-voltage, 250-volt system. In this system, these equipments supply dc power to a common bus for such applications as hoisting cranes, magnetic separators, magnetic pulleys, and general industrial machine-tool drives.

Motor-Generator Set

The motor-generator set is the oldest, and perhaps the most easily recognized apparatus for electric power conversion. For years it was the only practical means of obtaining large amounts of dc power. In its most common form, the motor-generator set is a combination of an ac motor and dc generator utilizing a common shaft, base, and bearings. Such assemblies, known as 2-unit, 3-bearing sets are available in ratings up to several thousand kilowatts. An outline and dimensions for several typical ratings are as shown in Fig. 3.

The driving motor is either of

FIG. 1-VOLTAGE REGULATION CURVES FOR DC CONVERSION EQUIPMENT FOR 250-VOLT DC INDUSTRIAL SERVICE



the induction or synchronous motor type. Motors of either design can be built for ac voltages from 140 to 13,200 volts, thus eliminating the need for step-down transformers on most industrial systems. The induction motor is the simplest, most maintenance-free machine, and has the lowest first cost, but it has the disadvantage of low power-factor operation. On the other hand, the synchronous motor has the advantages of being able to correct for low system power factor and of operation at constant speed with varying generator loads. But it requires more complex switching and control equipment, and requires more maintenance than the induction motor.

The dc generator is normally furnished compound wound with provisions for external series field strength adjustment. Proper adjustment of the series field strength will provide either drooping or flat voltage characteristics as shown by Fig. 1. A manually operated shunt field rheostat permits adjustment of the generator voltage to suit various operation conditions.

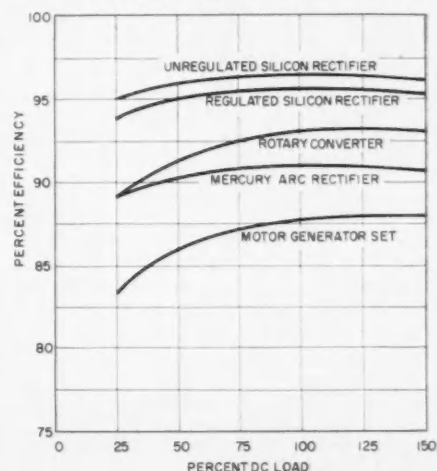
Generator output voltage is essential constant. With a given field strength, the voltage of a dc generator is a direct function of the armature speed. And, because the ac driving motor speed is practically constant for any given load and relatively independent of small ac voltage changes, small variations in

ac system voltage are not reflected in the generator output voltage.

Air cooled, the motor-generator is suitable for operation in a maximum ambient temperature of 40° C. Most sets in use today are built with either Class A or B insulation for operation at either 40° C or 60° C temperature rise.

The nameplate duty cycle of motor-generator sets for industrial duty is established by ASA Standard as 100% full load continuous, 125% full load for two hours, or 200% full load for one minute. Frequent use of the one minute, 200% full-load rating and repeated mo-

FIG. 2-TYPICAL EFFICIENCIES OF DC CONVERSION EQUIPMENT



mentary current peaks above nameplate rating usually results in excessive brush and commutator maintenance requirements. In addition, the peak momentary current-carrying capacity of the motor-generator set is limited primarily by the generator commutating ability and the maximum torque of the driving motor.

In motor-generator sets, losses consist of iron and copper losses, plus windage and bearing-friction losses, which are associated with all rotating equipment. Friction losses, and iron losses to a lesser degree, are nearly constant and independent of the generator load. This accounts for the low light-load efficiency of the motor-generator set as shown by Fig. 2.

The rotating nature of the motor-generator set requires a relatively elaborate and sometimes expensive installation to insure correct bearing alignment and adequate foundation. Any vibration attendant with its operation results in brush, commutator and bearing difficulties. Consequently, most sets are installed with provisions for bolting the baseplate of the machine to a concrete base. A typical installation is shown in an accompanying photo.

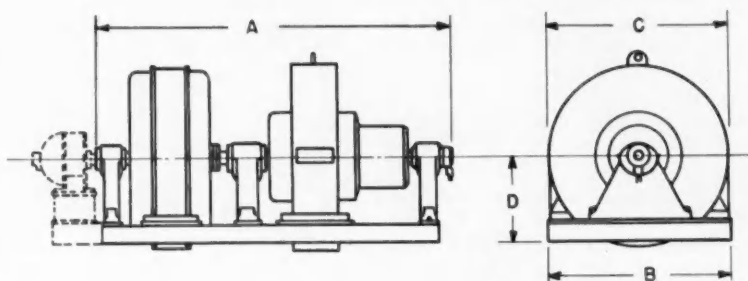
Maintenance requirements of motor-generator sets are well established and consist primarily of brush and commutator care, bearing lubrication, and periodic cleaning to maintain insulation at the required level. Periodic shutdowns are required to perform these maintenance functions.

Rotary Converter

The synchronous or rotary converter combines in one machine the essential characteristics of an ac synchronous motor and a dc generator. This is accomplished by utilizing one armature winding on the rotor of the machine and by providing collector rings for ac input on one end of the rotor and at the other end, a commutator for dc output.

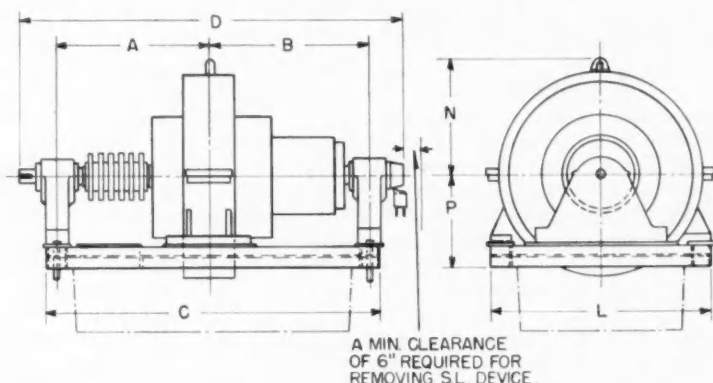
The field poles are similar in construction to those of a dc generator, except that they are provided with a damper winding for ac starting and operating stability. Most converters for industrial duty are furnished compound wound with shunt-field coils connected for self-excitation. The series field, which is suitable for flat compounding,

FIG.3- SPECIFICATIONS FOR TYPICAL MOTOR GENERATOR SETS



MG SET		MOTOR		POLES		DIMENSIONS (INCHES)				APPROX. WT. IN LBS.
KW.	RPM.	VOLTS	HP	MOTOR	GEN.	A	B	C	D	
500	900	440-7000	725	8	4	149	66	62	27	22 100
750	900	2200-14000	1100	8	6	169	90	80	28	32 000
1000	720	2200-14000	1450	10	8	180	90	80	30	39 600

FIG.4- SPECIFICATIONS FOR TYPICAL ROTARY CONVERTERS



UNIT	KW.	VOLTS DC	PHASE	CYCLES	RPM
(a)	500	250	6	60	1200
(b)	750	250	6	60	900
(c)	1000	250	6	60	900

UNIT	APPROXIMATE DIMENSIONS CORRESPONDING TO LETTERS IN OUTLINE VIEW (INCHES)							APPROXIMATE NET WT. LBS.	
	A	B	C	D	L	N	P	REVOLVING PARTS	TOTAL
(a)	41	40	87	102	52	27	27	4300	12 250
(b)	51	44	104	118	72	34	31	7200	19 500
(c)	54	47	110	124	72	51	31	8500	24 000

has provisions for external adjustment of the series field strength.

The dc output voltage of a rotary converter is a direct ratio of the ac voltage supplied to the slip rings. Consequently, any variation in the system supply voltage results in a

proportional change in the dc output voltage. Transformers are used to supply voltage of the correct value for rated dc voltage output, as well as to provide reduced voltage for starting. Since the

(Continued on page 207)

● ESTIMATING FORUM - XXIII

Analyzing Reported Costs Of Proposed Projects

PART II - Material and Labor Costs

By Ray Ashley, Research and Consulting Engineer, Oak Park, Ill.

STATEMENT:

The value of preliminary studies and the need for an estimator to be able to analyze reported costs for electrical work were discussed in a previous article (pg. 90, August, 1962, El C&M). Here, we shall analyze a specific project for which the estimated

cost of the electrical work is known.

The project is a 10-story office building with seven typical floors. The contract price for the electrical work is estimated to be \$600,000. The prevailing wage rate for electricians is \$4.00 per hour.

QUESTIONS: *What approximate values will an analysis of this specific electrical project reveal for:*

1. *Base Cost of the Project (purchase price of material and labor payroll)?*
2. *Base Cost of Material (purchase price)?*
3. *Base Cost of Labor (payroll)?*
4. *Total Job Labor (man-hours)?*

- ANSWERS:**
1. *A \$480,000 base job cost.*
 2. *A \$288,000 base cost of material.*
 3. *A \$192,000 base labor cost.*
 4. *A total of 48,000 man-hours for job labor.*

DISCUSSION:

To get the answers, refer to the multipliers in Fig. 1 applicable to a \$600,000 project. This table was first presented and explained in Es- (Continued on Page 174)

FIG. 1—Multipliers Applied to Contract Price

For Complete Installations with 60/40 MLR and \$4.00 per hr. Labor Rate

CONTRACT PRICE (Dollars)	MARKUPS USED							MULTIPLIERS (Unit × Contract Price)				HOURS LABOR
	MATERIAL MU (%)			LABOR MARKUP (%)				Base Cost THE JOB	Base Cost MATERIAL	Base Cost LABOR	LABOR HOURS	
	DJC	OH*	RET.	DJC	OH*	INS.	RET.					
1	2	3	4	5	6	7	8	9	10	11	12	13
7,000	3	10	8	8	35	10	10	0.704	0.422	0.282	0.071	500
13,500	3	8	6	7	28	10	10	0.741	0.445	0.297	0.074	1,000
26,200	2	7	5	6	25	10	10	0.765	0.458	0.307	0.077	2,000
39,000	2	7	5	6	22	10	10	0.770	0.462	0.308	0.077	3,000
64,500	2	6	5	6	20	10	10	0.776	0.466	0.310	0.078	5,000
96,000	2	5	5	6	18	10	10	0.782	0.468	0.313	0.078	7,500
127,000	2	5	5	6	17	10	10	0.788	0.474	0.315	0.079	10,000
315,000	2	5	5	6	15	10	10	0.794	0.476	0.318	0.080	25,000
625,000	2	4	5	6	14	10	10	0.800	0.480	0.320	0.080	50,000
930,000	2	4	5	6	13	10	10	0.806	0.485	0.322	0.081	75,000

Abbreviations:

DJC—Direct Job Costs
INS.—Insurance
OH—Overhead

MLR—Material-Labor Ratio
MU—Markups
RET.—Return (Anticipated Profit)

*—Overhead values from "Electrical Contracting," McGraw-Hill Book Co.



WASATCH ELECTRIC equipped truck with special vertical-lift platform to permit men to work safely at 30-ft height while installing and connecting 3-fixture lighting assemblies atop poles.



SALT LAKE CITY'S new Main St. lighting provides average pavement illumination of 4.5 footcandles; 5 times former lighting level although current consumption is 8% less.

Salt Lake City Ups Main Street Lighting

SALT LAKE CITY'S Main Street now ranks among the country's most brightly lighted commercial thoroughfares since new street lighting equipment has been installed. Three luminaires, arranged in a T-shaped pattern with a combined output of 87,000 lumens of fluorescent lighting, are mounted on each of 70 rebuilt and modified street lighting standards which, for 45 years, supported carbon-arc fixtures. The new installation increases illumination levels while cutting power requirements 8%.

Difficulties in obtaining carbons and replacement parts for the obsolete arc lamps dictated a change. An experimental installation of the fluorescent fixtures, compared with others using mercury-vapor lamps and incandescent lamps, gained the most public favor.

Wasatch Electric Co., Salt Lake City, won the contract. The project involved 70 street lighting standards, 14 per block, spaced 107 ft apart. Luminaires are mounted 34 ft above the street, one tilted slightly upward over the street and

the others parallel to the curb. The outer fixtures have four 6-ft, 1500-ma lamps and operate on 240-volt circuits. The other fixtures have two lamps each operated on 120-volt circuits. Lighting levels now average 4.5 fc, a five-fold increase over the former 0.9 fc.

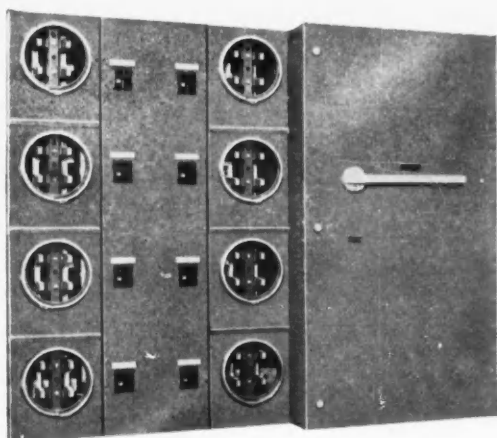
Two circuits serve each pole. A 240-volt circuit supplies the outer fixture and is switched by a magnetic contactor operated by a photocell device. A 120-volt circuit supplies the two other fixtures and a receptacle for connecting seasonal lighting displays. This circuit is operated by a time switch which turns it off at midnight.

Utah Power and Light Co. supplies power from existing vaults located under the sidewalk. Existing underground conduits and pole bases were also reused.

The existing poles, which once also supported trolley wires, were modified. They were cut off, just above the curb line by means of an acetylene torch and removed to the contractor's shop. There 11-ft extensions of 6-in. steel pipe were

welded on bringing the height to 34 ft. An inner sleeve was welded to the bottom. After sandblasting and a primer coat each pole was returned to its original location and installed on the old base. Concrete around the base was removed to a depth of about a foot. On erection, the inner sleeve aligned the pole with the base. The joint was then butt-welded. An outer sleeve, to give additional protection against corrosion at the bottom of the pole, was dropped over the joint and welded in place. New concrete was then poured around the base and the poles were painted with aluminum paint to provide suitable protection from corrosion.

The electrical contract amounted to \$97,000, slightly less than \$16 per front foot. Power costs run \$144 per pole annually or about \$1.70 per front foot and are shared; 75% is paid by the merchants and 25% by the city. The pole receptacles for seasonal lighting are expected to save the merchants about \$1300 and the utility about \$600 annually.



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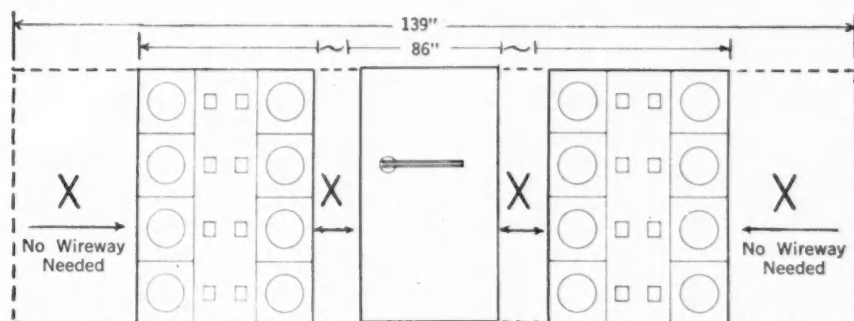
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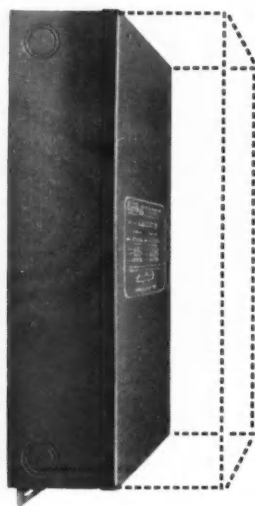


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Voltage Regulation for Electronic Equipment

At Todd Shipyard, Brooklyn, N. Y., a special problem in voltage regulation threatened to defeat maintenance operations for an incoming ship. Because the ship is an experimental antimissile ship laden with electronic and radar equipment, its power distribution system provides a nearly constant voltage regulated at plus or minus 1½%. However, when in the shipyard, the ship's power supply would be down for maintenance. And because testing of the electronic equipment was scheduled, the shipyard had to have available the regulated voltage required. But at the shipyard, the utility supply voltage varied nearly 13%.

In addition, the shipboard power needing regulation was nearly 700 kva. Because the ship was due into the shipyard in three weeks, the engineers at Todd were faced with the problem of obtaining a large regulator in a relatively short time. A custom builder of rectifiers in New York City promised to deliver a voltage regulator (700 kva, 3 phase, 460 volts, regulated at plus or minus

1½%) before the ship arrived in three weeks. And, in 19 days the unit was designed, constructed, tested and delivered to the shipyard ready for operation.

Major voltage regulator components include three 35-kva buck or boost transformers, 18 8-kva variable autotransformers, 12 special balancing reactors, a motor and chain-drive assembly, and an electronic sensing controller.

Constructed of 18 gauge, gray enameled sheet metal, steel angle and "I" beams, the frame measures 60 in. deep, 72 in. wide and 74 in. high. The variable autotransformers are mounted vertically on rotating shafts, six to each shaft. Located adjacent to the autotransformers, the buck or boost transformers require three 250 MCM conductors per leg on the line side to carry approximately 800 amps. The control unit is located behind the front panel, which is equipped with a voltmeter, ammeter, automatic-manual switch, voltage-adjust setting control and a sensitivity adjust.

Fig. 1 shows regulator operation. The sensing transformer feeds back a portion of the line voltage to the



VOLTAGE REGULATOR, rated 700 kva, 460 volts, 3 phase can provide regulation within plus or minus one-half of 1%. Operation is entirely automatic. Switch on control panel allows manual operation.

electronic sensing controller. When a voltage deviation occurs, the controller will then cause the motorized autotransformer voltage output to increase or decrease whichever is needed. At the same time, this autotransformer output voltage is being applied to the control windings of the buck or boost transformers, which will then add or subtract to the line voltage as required.

Regulation is quite accurate because the controller is essentially a balanced-bridge circuit, which can sense small voltage changes. A portion of the line voltage is impressed across one leg to the bridge. If a difference between these two voltages occurs, the electron tubes will amplify the difference voltage to operate either a "raise" or "lower" relay. These relays control direction of the motorized assembly that drives the variable autotransformers.

The drive unit consists of the motor coupled directly to six autotransformers and a sprocket and chain assembly coupled to the remaining 12 autotransformers (six paralleled autotransformers per leg are Y-connected).

Balancing reactors are installed to reduce any circulating currents that may occur if the sliding contacts on each autotransformer are not in perfect relationship to each other. Because of self-inductance, these reactors will oppose any unbalance current that attempts to flow.

Autotransformer output voltage is applied across the control windings of the 35-kva buck or boost transformers. These transformers,

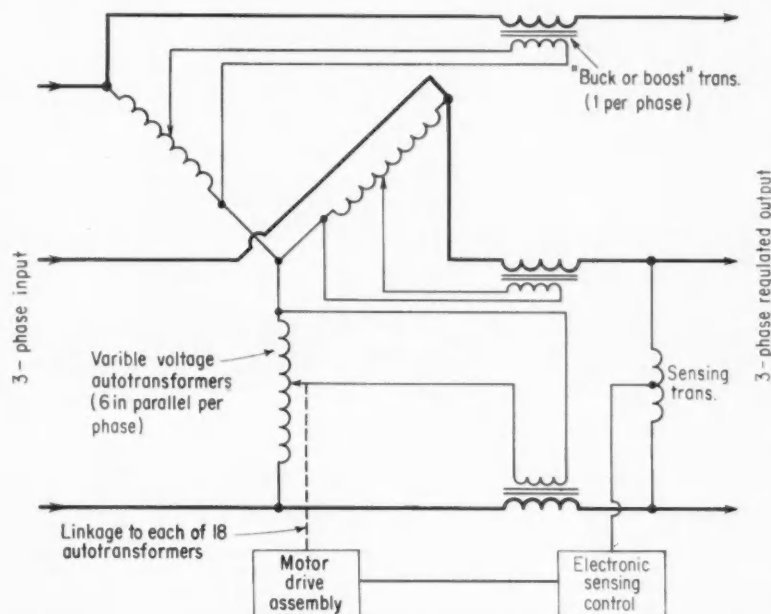
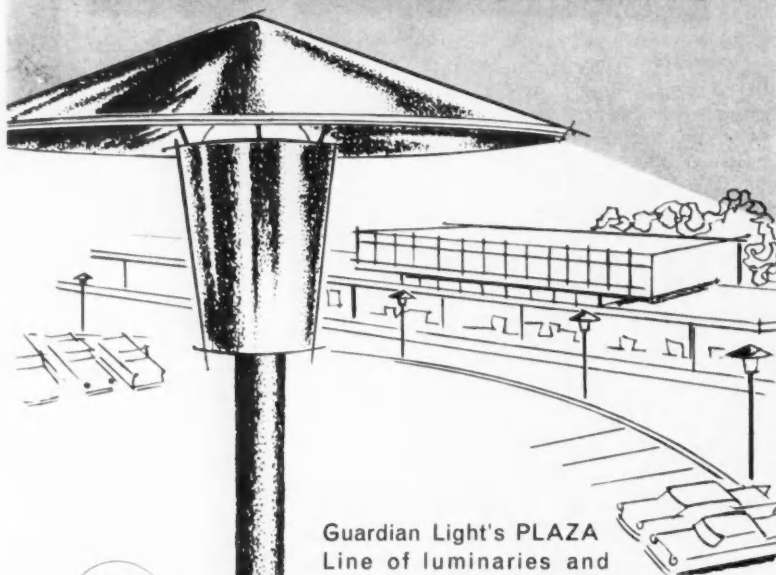


FIG. 1—One-line diagram shows how the voltage regulator operates. From the sensing transformer, a portion of the line voltage is fed back to the electronic controller where it is compared to a reference voltage. If a voltage variation occurs, the controller operates the motor assembly causing the variable autotransformer output voltage to increase or decrease whichever is needed. At the same time, this autotransformer output voltage is applied to the control winding of the buck or boost transformers, which then add or subtract to the line voltage as required.

PLAZA LINE

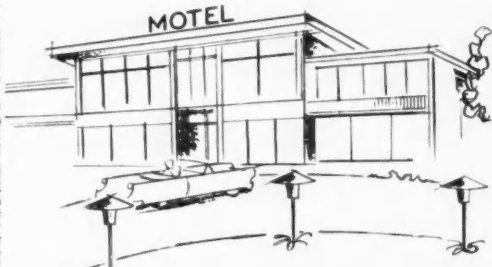
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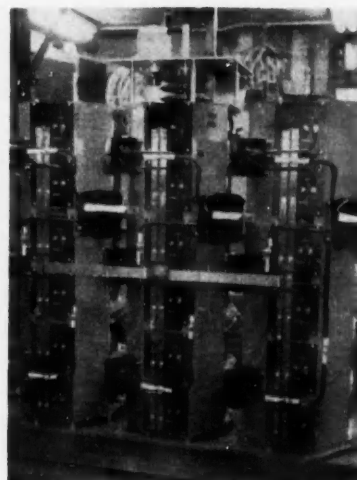


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VARIABLE AUTOTRANSFORMERS are arranged six per phase. In each leg, the 8-kva autotransformers are mounted on a common shaft which is chain-coupled to the motor drive assembly. Mounted on the autotransformer frames, iron-core balancing reactors will oppose any unbalance autotransformer circulating current.

connected in each phase, add or subtract to the line voltage as required.

This type of regulator may have many versatile applications. For example, it has desirable characteristics for use in conjunction with electronic equipment, computer and laboratory installations as well as normal voltage regulator applications in industry. Distinguishing characteristics include: no waveform distortion, high efficiency, no effect on power factor, close regulation, ability to withstand high overloads, simple maintenance, and, because of its comparatively lightweight, portability.

200-FC Installation Economically Justified

A cryptic case history of a 200-fc industrial lighting installation in southern California can be summarized briefly by citing successive reactions of management when they (a) first saw the lighting plan, (b) first saw the completed installation, (c) first saw the increased utility bill and (d) finally equated costs and charges to values obtained. This specific installation pertains to the Allied Pacific Mfg. Co., Compton, Calif., yet reactions are typical of those evidenced in numerous similar instances.

Initial reaction upon studying costs related to this 217-luminaire installation was "skepticism result-



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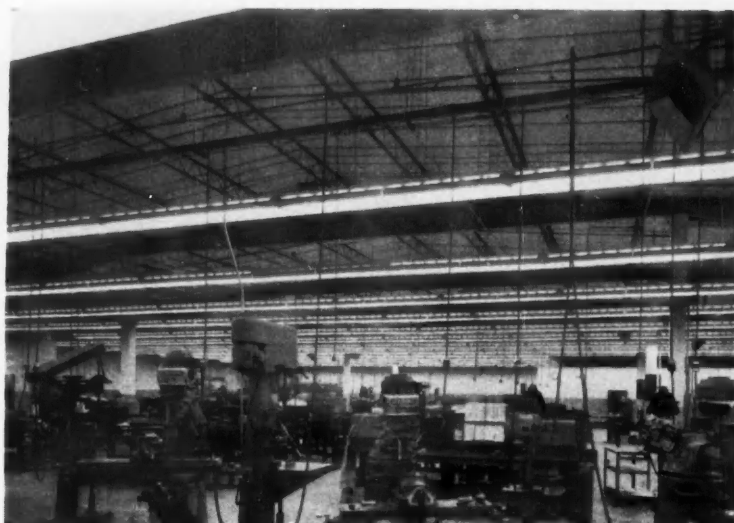
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AVERAGE INTENSITIES of 200-fc are obtained at working planes, while higher values are achieved in certain areas of critical importance by additional local lighting fixtures. Upward lighting component of 12% minimizes contrasts between luminaires and overhead surrounds, while high-reflectance painted room surfaces and progressive lighting maintenance program insures long-range returns on this investment. Measurable returns in forms of higher output and lower spoilage due to product rejection amortized cost of installation within eight months.

ing in reluctant approval,” for management had considered 60-fc lighting in a former plant “adequate” and this proposed 200-fc installation exceeded their tentative budget considerably. In addition, management was being asked simultaneously to consider additional expenditures for high-reflectance painting and a long-range lighting maintenance program. Approval was obtained after considerable education and promotion on the parts of Twombly Consulting Engineers and Southern Calif. Edison lighting engineer Melvin V. Paul.

The second reaction was “reluctant satisfaction” when, immediately upon completion of the job, footcandle readings taken at waist level averaged 205. After benches and machines had been positioned these initial readings dropped to about 180, although, after painting recommendations had been followed and color values lightened, the calculated and predicted value of 200-fc was achieved exactly.

The third reaction was “incredulous indignation” when the first utility bill was received; a reaction which placed designers in the unenviable position of defending a well-conceived plan.

But defend it they did—by requesting, obtaining and equating old and new data related to production output, material spoilage and rejects, absentee statistics and employee reactions. In all instances, results were up noticeably and meas-

urably. And, when those factors which could be translated into terms of hard dollars were evaluated, indications were that the installation (including initial costs plus increased utility charges) would be amortized from savings within ten months. This prediction was in error by 20%, because the installation actually paid for itself in eight.

The final reaction was one of “enthusiastic endorsement” because, as voluntarily testified by Allied president Donald Stull, “The new lighting has become an important working tool; a sound investment resulting in increased production, over-all plant efficiency and employee morale. Moreover, customers comment favorably upon the clean, modern appearance of our plant, and it is our considered opinion that good lighting is a very tangible business asset.”

As to physical details, 217 industrial 3-lamp luminaires are installed in continuous rows on 10-ft centers at a height of 12 ft above the floor to illuminate a new 17,000-sq ft irregularly shaped machine shop. Lamps are 8-ft cool-white rapid-start T-12 fluorescents operating at 800-ma and wired in tandem to 2-lamp ballasts. Slotted canopies permit an upward lighting component of 12% to minimize brightness contrasts between fixtures and overhead surrounds, while all room surfaces are matte finish having reflectance values between 65%, (for ceiling and upper walls) and 35%



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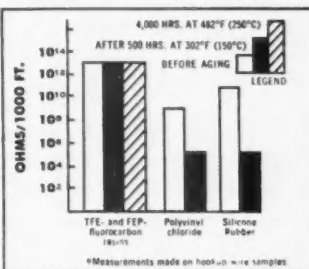
Thus insulation of TEFLON FEP resins provides an ideal solution in any industrial environment where high-temperature problems are encountered—in heater cables, 600-volt power cable, signal and control cables and thermocouple wire. FEP resins also make possible size re-

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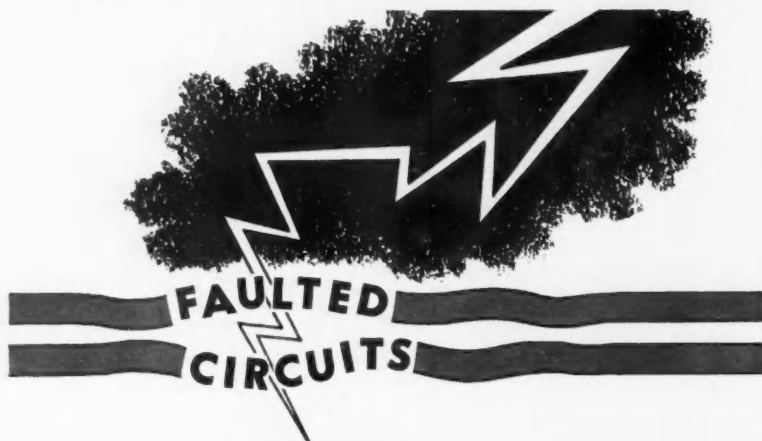
paper mills, boiler and generator plants of public utilities, wire and cable insulation of TEFLON FEP resins provides the utmost in reliability at prices competitive with other high-temperature insulations. For more details, write: E. I. du Pont de Nemours & Co. (Inc.), Dept. EC-9, Rm. 2526T Nemours Bldg., Wil. 98, Del. In Canada: Du Pont of Canada Limited, P. O. Box 660, Montreal, Que.



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(for cement floor). Brightness ratios between typical tasks and reflector exteriors average 1-to-1; between tasks and benchtops 3:1; between tasks and walls 2:1; between tasks and ceiling 2½:1; between walls and ceiling 4:1, and between tasks and reflector interiors 1:10. This maximum ratio, however, would not normally be experienced without looking directly up at lamps.

Relating this installation to "normal" machine shops, it may be stated that illumination values and brightness ratios are commendable. And, when it is added that this design was prepared, submitted and approved prior to the Blackwell report, the calibre of the installation is impressive.

Facts About Electric Shock

The only difference between receiving a minor electric shock, and the shock of your life (the last one, that is) is a matter of circumstance. The following should be "must" reading for anyone who works around electrical equipment—and who would like to stay around. It is an explanation of the effects of electricity on the human body.

Electricity kills by overriding the control the nervous system exercises over the various vital organs including the heart and the brain.

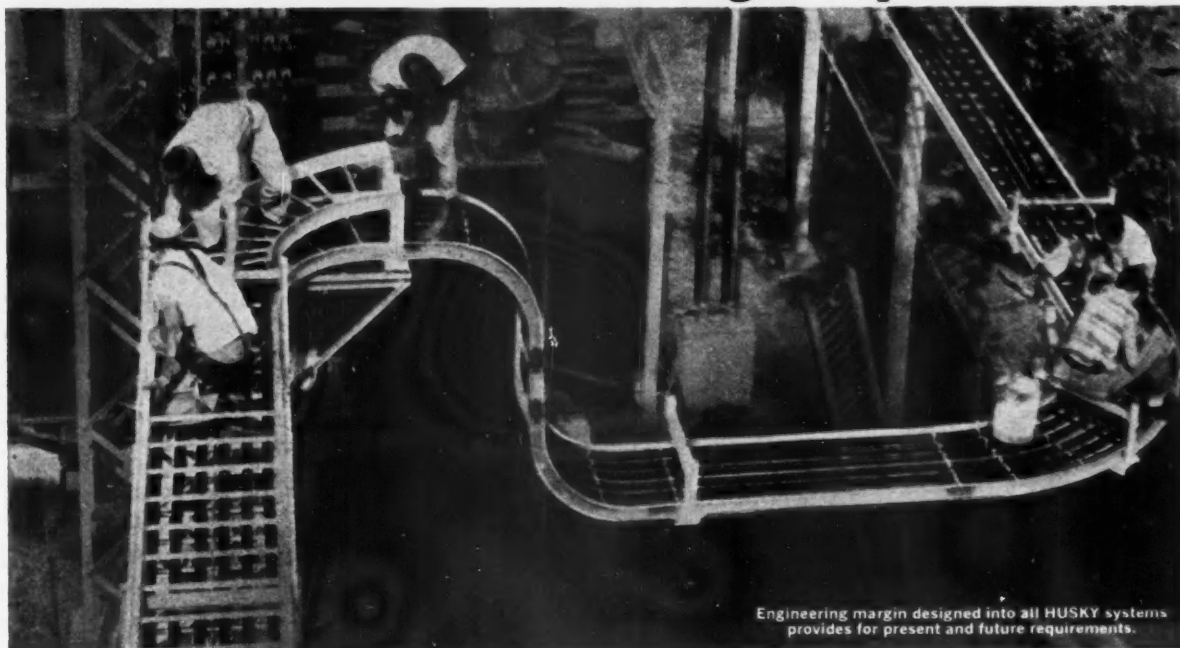
The brain sends instructions to the controlled parts of the body via an intricate electro-chemical network we know as the nervous system. If overridden by an outside source, the electrical impulses of the nervous system lose control of body functions.

The uncontrolled currents that flow during electrical shock swamp out the signals going to various parts of the body. Particularly dangerous are such currents that enter the heart and respiratory centers. Thus, a key factor in death by electrical shock is the path of the undesired current within the human body, as well as its amperage and voltage.

Death following shock is generally caused by one of two direct effects: ventricular fibrillation or respiratory-center paralysis.

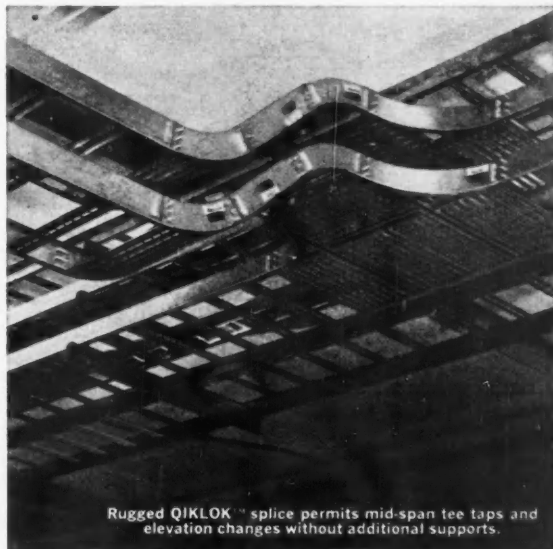
To understand ventricular fibrillation, we should know a little about how the heart operates. Controlling the heart muscles is a minute, electric current occurring periodically in the right auricle of that organ. If the conduction system of

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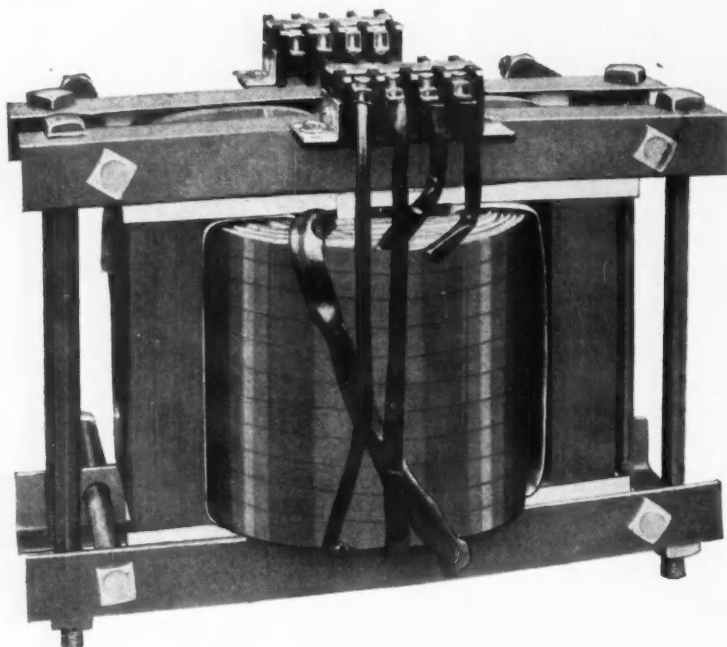
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the heart is disturbed, say by an outside electric current, the muscles respond in a haphazard fashion, rendering the organ useless as a pump. Known as a ventricular fibrillation, this phenomenon generally causes death since the vital body organs are not supplied with fresh blood.

Respiratory-center paralysis is the second most lethal effect of electrical shock. Normal breathing is controlled by a stimulus from a section of the brain. The electrical stimulus travels through a complex nerve network to the breathing muscles and lungs. An outside current can easily paralyze the network and cause breathing to stop. Actually death from shock can be caused by respiratory-center paralysis, by ventricular fibrillation, or by both.

For obvious reasons, the exact intensity of current that will cause death in a human being is not easy to determine. The following table presents key information, and it will serve as an illustrative guide.

Shock Current Intensities and Their Effects

Current in Amperes*	Effect
.001-.008	Sensations.
.008-.015	Painful shock for most people.
.015-.019	Paralysis of muscles through which current flows.
.020-.050	Possible permanent damage to tissues and blood vessels.
.050-100	May be lethal. Certain fibrillation of the heart —lethal.

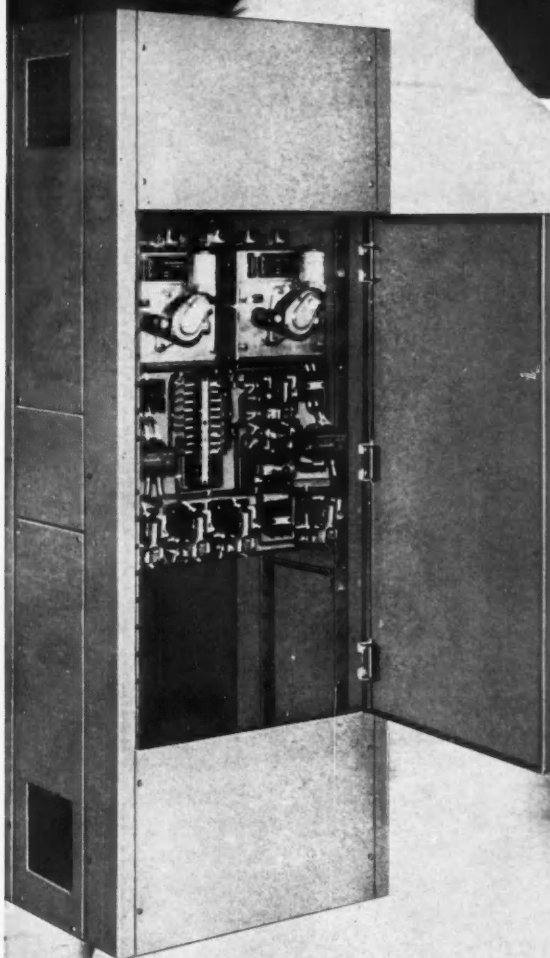
*The current required to operate a 10-watt bulb on 115-volt house current is .087 amps.

Currents of .07 to .09 amps generally cause death by ventricular fibrillation, if they pass through the chest. However, much lower currents can also prove fatal. A current of only .015 amp passing directly through the chest can render the victim incapable of releasing himself from the circuit, while simultaneously paralyzing the muscles of the diaphragm needed in breathing. Unless he is released from the circuit with outside help, he will die from asphyxia even though the heart and respiratory centers are not affected directly.

Thus far we have considered only the effects of a current passing through the body. However, voltage is the force that determines

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This super apartment building in Miami Beach on Biscayne Bay near Tenth Street contains 550 apartments in its twin 14 story towers.

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current magnitude. The amount of current for a given applied voltage, of course, depends on resistance—and the resistance of the human body varies widely. It depends, among other things, upon the path of current, the health of the individual, the duration of the current flow, the condition of the skin (wet, dry, etc.) and the area of contact.

While perspiring freely on a warm day, the resistance is so low that 40 volts could produce sufficient current to cause death. Confirming this, there are cases on record of deaths caused by 32-volt farm lighting system.

Not only the voltage and current magnitude but also the current body paths are important. Any route involving the heart or brain is dangerous. In a number of cases involving fatal shock at voltages below 250, 90% of the victims had marks on their left hands. This indicates that shocks through the left hand—hence, nearer the left side and heart—are more dangerous than those through the right hand.

WHAT TO DO—What should be done if you see someone rendered unconscious by electric shock?

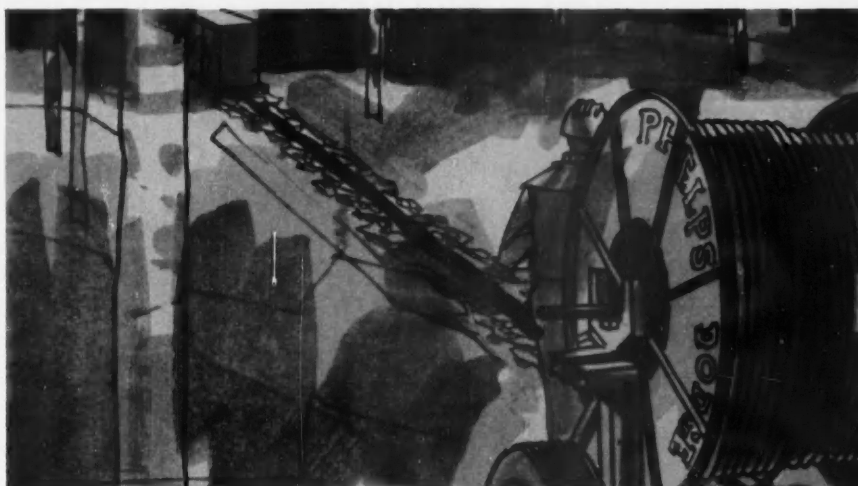
Every person who works near electrical equipment should be familiar with rescue techniques.

The first step is to break the connection between the victim and the power source. If possible, do this by turning off the power. The next best thing is to remove the victim from the voltage source—without endangering yourself. Use a wood board or other non-conducting object. As soon as you can touch the victim safely, apply artificial respiration. The mouth-to-mouth method is the most effective.

Speed is essential. Any delay at all greatly reduces the chances of recovery. Of some 600 cases studied, over 70% of those receiving artificial respiration within three minutes recovered. Just one more minute of delay dropped the figure to 58%. If there is no heart or respiratory action and treatment is delayed five minutes, death is virtually certain.

If you are alone, do not take time to go for help. Start artificial respiration immediately. If the person can be saved, you can do it as well as anyone. And don't stop even if the victim appears dead. Eight hours have elapsed, in some cases, before victims responded. The only sure sign of death is rigor mortis—and only a physician should judge whether that condition exists.

From the "Safety Newsletter," IBM Corp., Kingston, N. Y.



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Direct burial system substantially reduces original installation costs

Phelps Dodge now offers CDC, a new and advanced factory-assembled, plastic duct-enclosed cable for direct burial use. It retains all the advantages of standard duct construction but eliminates the costly time-consuming tasks of laying duct and pulling cable separately.

This Combined Duct-Cable unit design is particularly adaptable for use in Residential Underground

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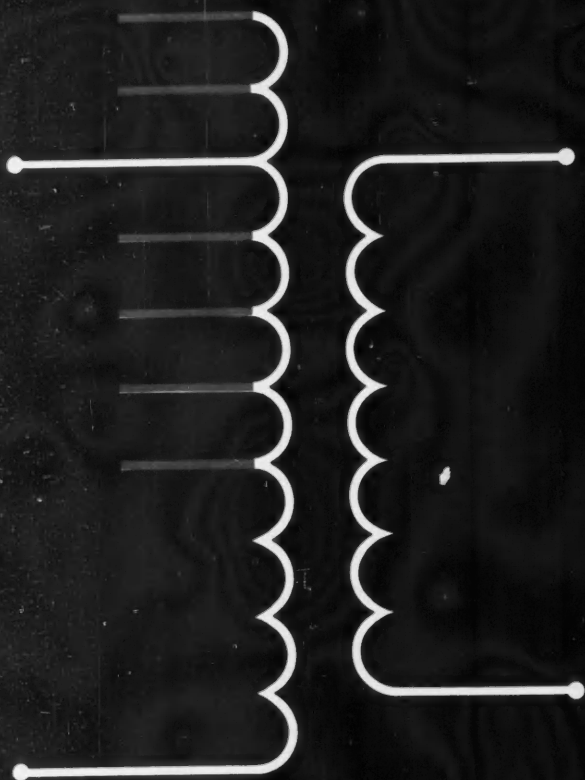
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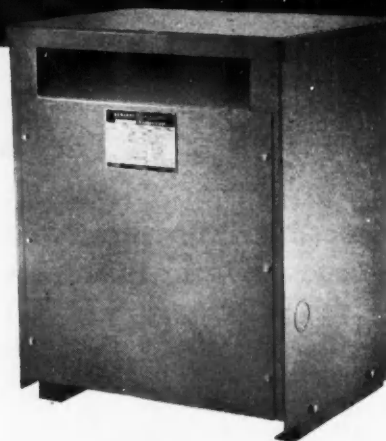


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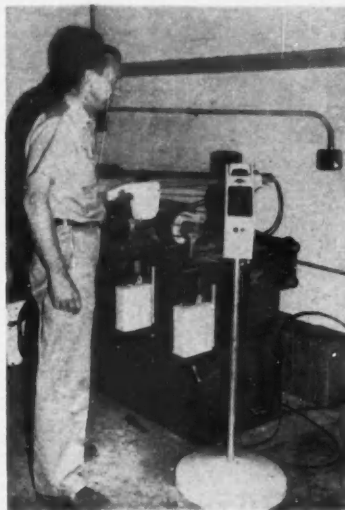
Modern equipment generally is considered as an investment in shop efficiency which can be measured by improved workmanship, better products, and labor savings. In the case of dynamic balancers, efficiency also can be measured by smoother running motors and generators, less noise, longer life. These benefits alone justify the purchase. In addition, however, such equipment can be justified as advertising or sales promotion investments, since modern equipment improves a shop's prestige and cultivates business.

This is the philosophy of L. J. Symmonds and William L. Casey, partner-owners of Electric Motor Co., Tucson, Ariz. Their philosophy is reflected in a shop stocked with quality materials and parts, kept clean to showcase their top-flight shop, and equipped with modern tools and machines.

The dynamic balancer is a case in point. It operates on the principle of resonance to detect unbalance at critical speeds. Detected vibration amplitudes are then translated into electrical impulses which may be read directly from meters. Positions and amounts of unbalance are located by a stroboscopic light beam. The balancer accepts all types of rotating components up to 500 lbs in weight, 44 in. in dia, 4½ ft in shaft length between cradle trunnion bearings.

When delivered to the above shop, the drive unit consisted of a 1725-rpm ½-hp, 115-volt, single-phase, single-speed motor. However, to obtain higher rotating speeds for testing rotors equipped with large diameter shafts, the motor was rewound as a 2-speed 115/230-volt drive.

Rotating elements under test are brought to desired speeds by means of a friction belt rotating around a drive sheave and a second sheave mounted on a pivoted drive arm. Speed is imparted to the test element merely by pressing the friction belt against the shaft or outer shell of the rotor, generator, impeller, or whatever the device being tested happens to be. Since no drive coupling is required, set-up time is reduced. When a variety of rotating elements are being tested suc-



ROTOR BEING TESTED for dynamic balance is rotated above critical speed by lowering drive arm and friction belt against rotor shaft. Drive belt is then raised, drive motor switched off. Rotor coasts through point where resonance occurs. Mechanical vibrations are detected by tunable pickup dashpots. Stroboscopic light beam locates exact position of unbalance. Weight correction is recorded on meter having sensitivity of 1/100 in.-oz.

cessively, these reductions in set-up time add up to a considerable time saving.

In testing, a rotor (for example) the drive belt is first pressed against the rotor's shaft until the rotor speed is higher than that attained in normal operation. The operator then raises the drive belt. This permits the rotor to gradually coast through its resonant peak. He also switches off the drive motor. This eliminates all vibrations except those being investigated. Therefore readings of meters are exact.

Upon completing the test, the rotor can be decelerated and stopped by reactivating the drive system, pressing the friction belt against the rotor shaft, then stopping the motor by switch-brake control.

Elements being tested are supported by trunnion bearings suspended from flat springs which realign themselves, regardless of diameters of shafts, or whether shafts are uniform in cross section or tapered. Bearings are supported by a cradle assembly; one member of which may be moved along a bed track to accommodate shafts of different lengths.

As a rotating element coasts through its critical speed at which resonance occurs, resulting mechanical vibrations are detected by a tunable electronic device which filters out all vibration frequencies except those for which the device has been preset. This detection unit has a time delay so that transient vibrations, such as those induced by passing trucks or nearby motors starting up, will not have an effect on the proper operation of signaling mechanism.

Mechanical vibration is measured electronically. Electrical impulses of proportionate amplitude trigger a strobe light beam which locates and indicates the exact position of unbalance. This equipment determines the critical speed at which resonance occurs, prescribes amount of required weight correction, and pinpoints the exact position where weight should be placed. Readings are to 1/100 in.-oz.

Strobe light, meters and switches are mounted in the same housing so the operator can read and control the balancer from one position. Tubes and electronic components used in this balancer are standard elements which can be obtained from local radio or TV shops. Replacements, adjustments and repairs are simplified by wiring diagrams supplied with the balancer.

While owners of the Electric Motor Co. purchased this item only to locate and correct vibration, they now emphasize that an important added benefit is the enhancement of their shop's reputation with customers.



NO ONE is a stranger at an EASA meeting agree (L to R): George McDaniels, Kufen Electric Motors, Inc., Warminster, Pa.; and Lynn R. Silver, C. W. Silver Co., Salt Lake City, Utah, during session break at recent EASA Convention in Chicago.

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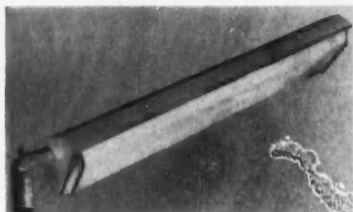
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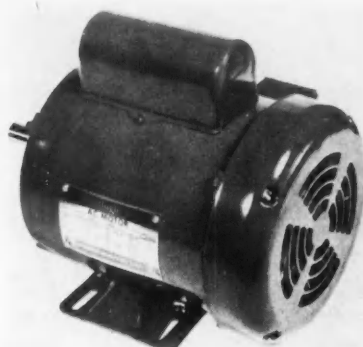
Product News



Floodlights (1)

Two new fluorescent floodlights, an FAF "Spacemaster" series for service stations, parking lots and outdoor work areas; and an FTC "Shieldbeam" fluorescent top-cutoff floodlight for airport loading aprons and other low-brightness applications. New weatherproof "Spacemaster" model is designed so that it can be mounted at one end, at its center, or with two units end to end. Models are available in 4-, 6- and 8-ft lengths. They can be equipped with either two or four lamps, and with any of three fittings. The FTC "Shieldbeam" fluorescent floodlight has a special top-cutoff feature so that no light goes above its horizontal level. It is available in 4-, 6- and 8-ft lengths. Lamps are 135° reflectorized, ultra-high output units with recessed double contact bases.

Crouse-Hinds Co., Syracuse, N. Y.

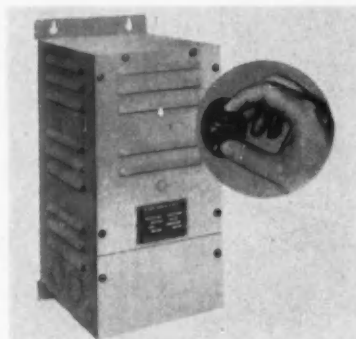


Motor (2)

A new line of totally enclosed fan-cooled motors on the NEMA 56 frame size is now available. Single-phase and polyphase motors rated from $\frac{1}{2}$ to 1 hp at 1725 rpm are included in the new line. Features are permanently lubricated ball bearings, rigid foot mounting, large conduit box and a corrosion-resistant shaft extension. Automatic Thermoguard protection is also available as an optional fea-

ture on the single-phase capacitor start motors. Laminated slot insulation incorporating "Mylar" polyester film and thermosetting varnish makes windings resistant to heat, moisture, electric stresses and other hazards.

Westinghouse Small Motor Div., Lima, Ohio



Voltage Controls (3)

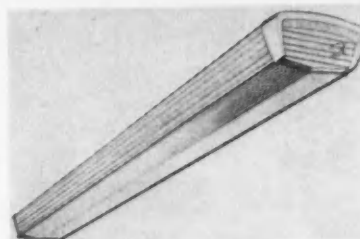
New Solidstat variable voltage controls use controlled rectifiers and solid-state devices, and will control inductive or lagging power factor loads. Operating on a closed loop, error-detector principle, they provide instantaneous response and are insensitive to line or load voltage changes. Standard types are available for 120- or 240-volt operation with output ratings of 6, 12 or 24 kva. Solidstats can be controlled by a potentiometer, by a current feedback sensing circuit or by a voltage sensing circuit.

Superior Electric Co., Bristol, Conn.

Controls (4)

A line of compact, explosion-proof, surface mounted station boxes with heavy-duty controls has been announced. Unit measures $4\frac{1}{2}$ in. deep, $4\frac{1}{2}$ in. wide and up to $18\frac{1}{2}$ in. long. Heavy-duty control operators include selector switches, pushbuttons, and pilot lights. Operators are assembled in cover when box is to be surface mounted. Same box also can be used for flush panel mounting by locating either standard or heavy-duty control operators through back of box. Boxes are produced in eight sizes for up to nine control stations.

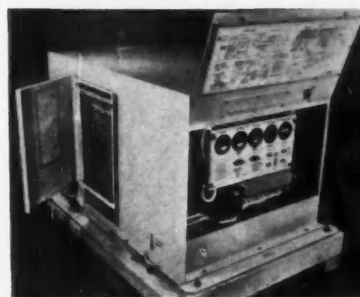
Adalet Manufacturing Co., 14300 Lorain Ave., Cleveland 11, Ohio



Lighting Unit (5)

A new corridor lighting unit, called the "Caron," has been introduced. The translucent white plastic diffuser has decorative longitudinal ribs that alternate with prismatic ribs. The plastic is supported the full length of fixtures and on both sides. There are retaining clips on each side. Plastic endcaps are attached to metal end plates. The Caron is available in 4- and 8-ft lengths, in both 1- and 2-light fixtures. Depth is 3 in.

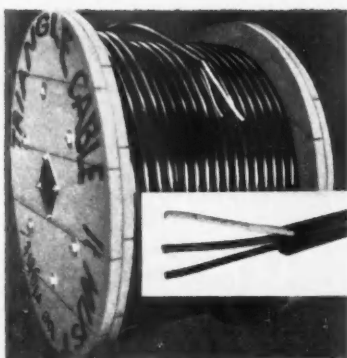
Curtis-Electro Lighting, Inc., 1536 South Paulina St., Chicago 8, Ill.



Motor-Generator Set (6)

A new motor-generator set, mounted on skids, called the MD-4, is fully enclosed within its housing, but the whole unit is movable from place to place by dragging or lifting. Many different output voltage and frequency configurations are available. The set shown is used as a frequency converter, converting 60 cycle, 220/440-volt ac to 400 cycle, 208/120-volt ac, single or 3-phase. Desired output is selected by altering output connections of generator. Generator is rated at 50 kw or 62.5 kva with 0.8 power factor. Motor is a synchronous, 6-pole, 220/440-volt, 60-cycle, 3-phase input.

Electric Products Co., 1725 Clarkstone Road, Cleveland 12, Ohio



Duct-Cable System (7)

A complete, preassembled underground circuit comes enclosed in plastic duct. The unit-type duct-cable system is engineered to overcome wasteful installation of short lengths of duct, joined by many couplings. Instead, single, long lengths of coilaible plastic duct, already containing the required number of parallel conductors, are shipped on reels. Some applications for the system are underground street and highway lighting installations, underground distribution systems of various types, services to and between industrial and commercial buildings, connections to pad mount transformers, control cable installations, etc. Any number and type of conductor may be used, the only limitation being the I.D. of the duct, which is available from 1-in. to 2-in. sizes.

Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.

Time Meter (8)

A direct-current-running time meter, designated Series C-8, is now available. Unit provides digital readout of operating time from 1/10th of an hour to 9999.9 hours. The C-8 is powered by an automatically wound clock movement driving a five-digit digital readout counter and is available in all dc voltages and time counts. The standard model operates on 6, 12, 28 and 32 volts dc.

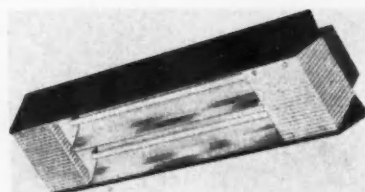
Industrial Timer Corp., Highway 287, Parsippany, N. J.

Connector (9)

A new watertight connector for use in flexible liquid-tight conduit installations has been introduced. Called Chase liquid-tight connectors, fittings are used in the same way on flexible liquid-tight conduit as the standard Chase nipple is

used on rigid steel conduit. For flush type mounting in JIC and shallow panels. An "O" ring at knockout provides a positive seal against moisture. Connector has an insulated throat, beveled to stand off conductors running at right angles leaving connector. Connectors use standard pipe threads so that they can be joined with standard raceway fittings. Entire connector can be disassembled and reused. It is locked in place from outside of box. Connectors are available to cover conduit sizes from 3/8 in. to 4 in. Connectors are UL listed and CSA approved in sizes up to 1 1/2 in.

Thomas & Betts Co., Elizabeth 1, N. J.



Heating Unit (10)

A new electric infrared comfort heating unit for high mounting heights, corridors or rooms with small floor areas, is now available. The "NB" heater confines most of the radiant energy to a narrower pattern, thus increasing available heat to people or objects directly below the unit. The use of one infrared source in the narrow beam distribution comfort heater will provide an asymmetric pattern. T-3 quartz lamps are utilized in the new heater with wattage from 1600 to 6000. Voltage is 208, 240 or 480.

Fostoria Corp., 1200 N. Main St., Fostoria, Ohio

Bracket (11)

A new box and conduit support bracket has been introduced for mounting of boxes on metal studding. Bracket may also be mounted on wood studding or joists. The 16 ga galvanized steel mounting bracket securely mounts 1 1/2 in. deep outlet boxes flush with studding or joists. Two-in. deep switch boxes are mounted by inverting the bracket. Box and conduit brackets are available in two styles for mounting square and octagon boxes with 1/2 in., 3/4 in. or combination 1/2 in. and 3/4 in. knockouts. Brackets are used with either rigid conduit or electrical metallic tubing.

Steel City Electric Co., 1207 Columbus Ave., Pittsburgh 33, Pa.



Lighting Fixtures (12)

Explosion-proof mercury vapor lighting fixtures, "H" series, for Class I, groups C and D hazardous locations, are available. Fixtures come in a variety of styles, accommodating 175-, 250- or 400-watt lamps, with various types of reflectors. Clear, smooth globes are furnished as standard items on all fixtures.


Killark Electric Manufacturing Co., Vandeventer and Easton Aves., St. Louis 13, Mo.



Pipe Threader (13)

A new pipe threading machine, complete with built-in die-head, cutter, reamer and oil sump and pump, has been announced. On all sizes of pipe from 1/2 to 2 in. incl., a tripping device automatically opens the dies when a correctly tapered, full length, standard pipe thread has been cut. Two sets of dies handle the automatic opening range, one set for 1/2 and 3/4 in. and one set for 1 to 2 in. The drive motor of the Model 100-A is the universal, reversible, variable speed type, rated at 1/2 hp. Standard motor will operate from 115 volts, ac.

Oster Manufacturing Co., Wickliffe, Ohio



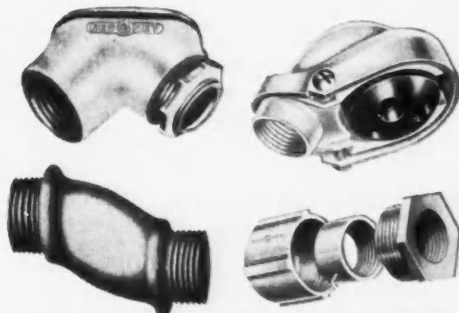
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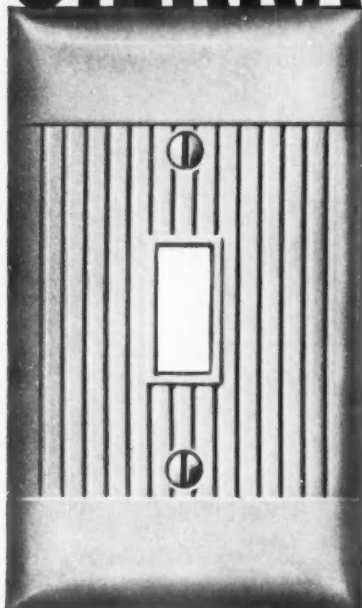
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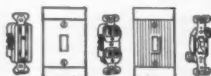
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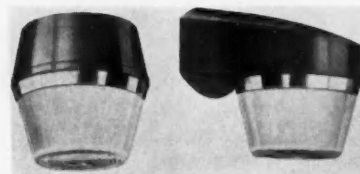
Lighting (14)

A new concept in "picture" lighting for home and commercial installations has been achieved with introduction of an all-new bullet projector, designated Model H-2370. Unit has ability to cast rectangles, squares and geometric light forms through a built-in optical projector which is equipped with four frame-in shutters. Unit has a .040 spun aluminum enclosure, and an adjustable 360° swivel. Lamp is a 100-watt G16- $\frac{1}{2}$ bayonet base, dc. Catalog is available.

Halo Lighting, Inc., 4201 W. Grand Ave., Chicago 51, Ill.

Lamps are available in three beam types: narrow spot, designated 300PAR56/2NSP; medium flood, designated 300PAR56/2MFL; and wide flood, designated 300PAR56/2WFL.

General Electric Co., Large Lamp Dept., Nela Park, Cleveland 12, Ohio



Lighting Units (16)

New wall and surface-mounted incandescent luminaires with wide spread Amcolenses are designed for outdoor commercial, industrial, and residential applications. Use of a lens instead of white opal glass increases efficiency. Surface-mounted unit is intended for mounting in an overhang, under canopies, or in walkways where a surface unit is more convenient than the companion wall unit. The wall-mounted luminaire is made of die-cast aluminum; surface-mounted unit is 18-gage aluminum. They are designed for 150- or 200-watt lamps. The wall-mounted design extends 9 $\frac{1}{4}$ in. from wall, height is 8 in., width is 8 $\frac{1}{4}$ in. Diameter of surface-mounted unit is 7 $\frac{1}{4}$ in., overall height is 7 $\frac{1}{4}$ in.

Art Metal Lighting Div., Wakefield Corp., 1814 East 40th St., Cleveland, Ohio.



Floodlamps (15)

New 300-watt spot and floodlamps, designated "Cool-Beam," have a special filter which reflects light but transmits heat. Two-thirds of the infrared energy is removed from the beam, making lamps suitable for floodlighting fresh meat, candy and show window displays. The lamps are hard-glass, sealed-beam bulbs, 7 in. in diameter, with built-in parabolic reflectors. Reflectors are composed of unique filters, consisting of 17 ultra-thin coatings of a metallic substance. Proper design of the filter produces a coating "tuned" to project a "cool" light beam and radiate heat out the rear of the lamp. The lamps are not interchangeable with existing types; their longer bases require fixtures especially designed to handle the increased amount of heat to which they will be sub-

Motor Operator (17)

A compact motor operator which features an exclusive side mount design for E, EH and F frame circuit breakers has been announced. Available for applications to 100 amps, 600 volts, ac, the MOB, Jr. operator provides smooth, shock-free service by means of a cam arrangement to throw the operating arm, and use of a rugged gear head motor drive. Control voltages for remote operation include 120, 240, 277, 480, 600 volts ac and 125 volts dc. Operator can be panelboard mounted with remote source control, or unit can be located remote from distribution center with clustered controls at the panel. Remote arrangements include push-buttons, relays, automatic controls and combinations, using available voltages for the control circuits.

Lake Shore Electric Corp., 205 Willis St., Bedford, Ohio

Lamp

(18)

A 500-watt iodine quartz lamp, one-tenth the size but with twice the rated life of a comparable incandescent lamp, has been introduced. Dual fuses, housed in ceramic caps at each end of lamp, eliminate need for external fusing of fixtures used in conjunction with lamp. Designed for general lighting installations, lamp is expected to find wide application in commercial and industrial establishments and in the recreation and transportation fields. Rated life of the new IQ lamp is 2000 hours. The 500-watt, fused IQ lamp is available in standard and rough service design.

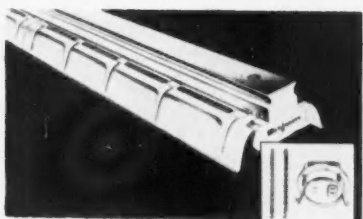
*Sylvania Electric Products Inc.,
Salem, Mass.*

Receptacle

(19)

A flush mounted night light and receptacle combination has been introduced. Rotary switch makes turning on and off simple. Modern, one piece, louvered, bakelite faceplate. Six-watt lamp furnishes enough light for safety and convenience. Dimensions of faceplate $4\frac{1}{2}$ by 2 $\frac{1}{2}$ in., mounting screws included. UL listed and CSA.

*Rodale Mfg. Co., Inc., Emmaus,
Pa.*

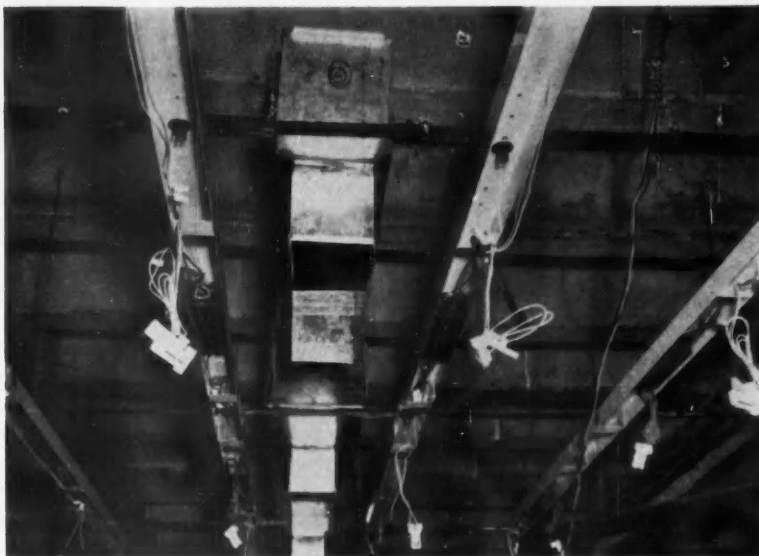


Fluorescent Fixture

(20)

A new line of fluorescent lighting fixtures featuring an "easy up" hanger system has been introduced. Known as the Task-Master series, the new line includes three models; a 400-watt rapid-start unit, 4 ft in length with 10% upward diffusion of light through slots in top of reflector; a 96-in. Slimline model with 10% upward diffusion and 96-in. Power Groove, SHO or VHO model with 25% upward component. All models feature two fluorescent lamps in parallel in the 4- or 8-ft lengths and 13 degree crosswise shielding. The ceiling outlet includes a plug-in receptacle.

Benjamin Div., Thomas Industries Inc., 207 E. Broadway, Louisville 2, Ky.



CHANNEL PROBLEMS TO GAT.

ELECTRICAL CONTRACTOR:

Einheit Electric
Cleveland, Ohio.

JOB SITE:

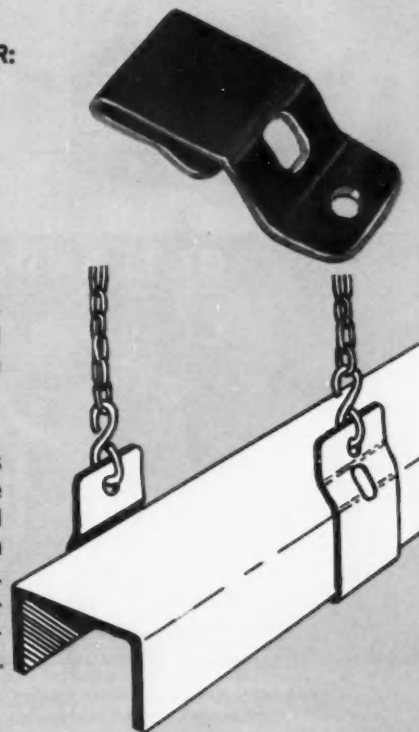
Cleveland Federal Savings & Loan.

PROBLEM:

To install grid suspension system of $\frac{3}{4}$ " lather's channel in the inverted position below a concrete ceiling.

SOLUTION:

GAT 2-B-L Channel Clips fastened to alternate sides of lather's channel and suspended from chain fastened to ceiling. This allows easy adjustment for leveling of fixture suspension system.



GAT. FASTENER Div.

ERICO PRODUCTS, INC.
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- All coils have end filler protection in each layer to prevent movement of conductors under heavy loads and short circuit stress conditions.
- The transformer core and coil unit is specifically designed for low sound level. In units 15 KVA and

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Engineering group out west studies recently installed 112½ KVA Sorgel unit in Tektronix's main facilities at Beaverton, Oregon. Contractor commented on the fast installation of Sorgel units because of easy accessibility to terminal connections. Contractors claim Sorgel units are the easiest to install, best operating they have ever seen.

CHICAGO

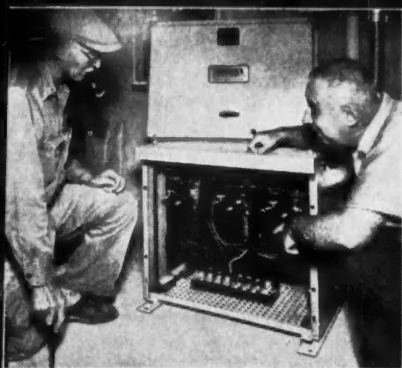


This team was responsible for the installation of these 112½ KVA units in Chicago's Morton Salt Building. They provide continuous electrical service for one of the nations largest electronic computers. Sorgel built-in quiet-quality provides extra margin of safety.



the Symbol of Specialization

FT. LAUDERDALE



Quiet level of operation plus ease of installation are two of the many big advantages of this Sorgel 75 KVA unit recently installed in new Broward County Court House, Ft. Lauderdale, Fla.

PUERTO RICO

Sorgel equipment serves internationally. This unit substation is installed in a psychiatric hospital in San Juan, Puerto Rico. It provides power for all electrical needs, lighting operating rooms, office electrical equipment, and utilities. Reviewing the installation are Mario Franceschini, Sorgel Engineering Representative, Ruben D. Reyes Electrical Engineer and Contractor, and maintenance man Modesto Aponte.



Find a control job this can't do!

There aren't many. This dependable photoelectric unit and others in General Electric's full line can control an almost endless number of jobs. And they do it so efficiently that you'll save money by using photoelectric control.

A new 24-page catalog by General Electric, "Photoelectric Control," can help you learn more about these modern control devices—many brand new. The catalog shows how photoelectric systems work. It suggests applications: sorting, alarming, detecting, counting, sensing, protecting . . . and many others. Also, it has complete information—including prices—on General Electric photoelectric equipment and systems.

For your copy, write for bulletin GEA-6822, Section 793-8, General Electric Co., Schenectady, N.Y. After reading it, try to find a control job photoelectric units can't do for you.

Progress Is Our Most Important Product

GENERAL  ELECTRIC



Switchgear

(21)

Introduction of a new line of 600-volt metal-enclosed low-voltage switchgear, Type ME, which incorporates numerous operating and maintenance benefits has been announced. It is available in continuous current ratings through 4000 amps and interrupting ratings through 150,000 amps. The line features Pyro-Shield insulation, front access metering current transformers, power circuit breakers with self-contained dual or selective static overcurrent trip devices, and integrally mounted breaker lifting device. It is available with breaker mounted fuses on the 600- and 1600-amp frame size units designated as the LA-600F and the LA-1600F fused breakers to provide fault protection up to 200,000 amps with direct acting static overcurrent trip devices and trigger fuses which prevent single phasing.

Allis-Chalmers Manufacturing Co., Milwaukee 1, Wis.

Recessed Luminaire

(22)

A new recessed incandescent downlight luminaire has been developed. A range of 19 different decorative ceiling trim and diffuser variations are available in various colors and finishes for use with the standard unit housing, including: louvered or open trims, decorative skirts or flat trims, aluminum or steel trims, dished opal or blown glass trims, fresnel lens, pinhole spots and conical shapes. Housing is adjustable to take any of seven lamp sizes in its built-in reflector-lampholder. Ceiling mounting plate suits unit to dry wall, plaster and even hung acoustical ceilings. Units are available prewired with JB on plate for ready connection to 60° wiring, or wired with 4½ ft of No. 14 AF leads or unwired.

Litecraft Mfg. Corp., 100 Dayton Ave., Passaic, N. J.

Breaker

(23)

A new addition to the Stab-lok system of circuit protective devices for larger main protection in residential and commercial panels has been announced. Cat. No. NB100, 2B125, 2B150 and 2B200 bolted main breakers fit directly in main lug area of Stab-lok enclosures and do not utilize any branch circuit bussing space. Entire bussing is available for branch circuits. Available in ratings of 100, 125, 150 and 200 amps, the new 2-pole bolted main breakers are designed for rapid field installation on main bus studs by tightening two stud nuts. Integral lugs on breakers are suitable for either copper or aluminum line conductors.

Federal Pacific Electric Co., 50 Paris St., Newark, N. J.

Control Center

(24)

A new control center, called MEKontrol Jr., has been developed. It is designed for wall mounting but can be floor mounted if desired. Designed to meet or exceed NEMA 12 and JIC requirements, the Model Jr. is designed for all makes of motor control. Bulletin CC-6.1 is available.

Machinery Electrification Inc., 56 Hudson St., Northboro, Mass.



Lighting Unit

(25)

A new fluorescent lighting unit for commercial and industrial applications has been announced. Known as the Wakefield Symmetric, the luminaire is designed for two, four or eight 40-watt, rapid-start fluorescent lamps. Available in 4- or 8-ft length fixtures, the 4-ft Symmetrics are available in either 2- or 4-lamp designs, while the 8-ft units are built for either four or eight lamps. The 8-ft units are basically two 4-ft units mounted in tandem. The plastic diffuser is 4 in. thick and is easily removable. Over-all body depth on the 2-lamp width unit is 3½ in. while depth for the 4-lamp width is 4¾ in. It is designed for either close-ceiling or stem mounting.

Wakefield Lighting Div., Wakefield Corp., Vermillion, Ohio

JOIN THE CIRCLE

OF CONTRACTORS
WHO DEMAND
ONLY THE BEST!

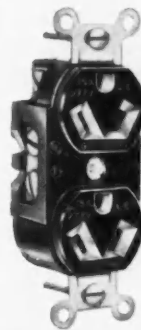
You can't argue with successful contractors any more than you can argue with success. When a contractor tells you Circle F is his one best single source for all residential, commercial and industrial wiring devices, you can bet your bottom dollar he's successful. And you can bet he's paying bottom dollar, too. Join the circle of success, insist on Circle F.



CIRCLE F 277 VOLT

GROUNDING DEVICES

New, 15 amp. 3-wire "U" Ground devices have been designed for lighting applications and other equipment requiring 277 volt circuits. They meet all applicable Government, NEMA & ASA specifications and are UL listed.



Where interlocking and positive grounding are essential to eliminate accidental disconnects, Circle F's "Circlok" Grounding devices are ideal.

CIRCLE F MFG. CO. TRENTON, N.J.

"Hi-RED" PLASTIC EXPANDING SCREW ANCHORS



SAVE UP TO 70%

USE IN ANY MATERIAL YOU CAN DRILL: CONCRETE, STONE, CINDER BLOCK, BRICK, MORTAR, TILE, ETC.

MILLIONS IN USE!

(A REAL JOB-PROVEN ANCHOR)



"Hi-RED" anchors may be cut as needed for short screws

- Anchor costs less.
- Costs less to install — takes smaller hole ... no tamping.
- Terrific holding power (P.T.L. ratings up to 4,180 lbs.)
- Sizes up to 1/2" lag screw.



... and used in tandem with long screws.

BUY 'EM IN BULK OR KITS!

FREE SAMPLES

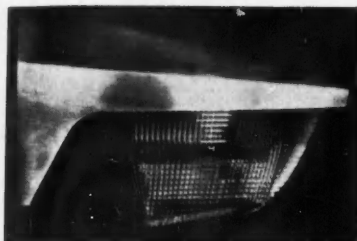
SEND "Hi-RED" SAMPLES

NAME _____
FIRM _____
STREET _____
CITY _____ STATE _____



HOLUB INDUSTRIES, Inc.

442 ELM ST. • SYCAMORE, ILL.



Lighting

(26)

A new wall bracket, called "Delta 7," is for lighting outdoor and indoor areas to insure safety and protection of industrial, institutional and commercial buildings. Up to 200 watts providing widespread light distribution will illuminate entrances, walkways, driveways, loading platforms, airplane aprons, railroad stations, parking areas and other locations in and adjacent to buildings. Installation to cast aluminum junction box is by means of patented center lock-up. "Folio 62-3" is available.

McPhilben Mfg. Co., Inc., 1329 Willoughby Ave., Brooklyn 37, N. Y.

Boxes

(27)

A new line of 4-in. square outlet and device boxes with metal tabs to accommodate 3/4-in. and 1-in. plasterboard in 2-in. solid partition wall construction has been introduced. Boxes are an addition to existing line for 3/4-in. and 1-in. plasterboard. Light gage metal tabs are welded to two sides of boxes. Metal tab prongs are bent outward at 90° angles from box to embrace various thicknesses of plasterboard. The line consists of Cat. No. 52141-ED-1/2 regular type box and Cat. 1-1/4-ED-1/2 thru-wall box. Boxes are 1/2-in. deep with standard 1/2-in. knockout arrangement.

Steel City Electric Co., 1207 Columbus Ave., Pittsburgh 33, Pa.

Intercom System

(28)

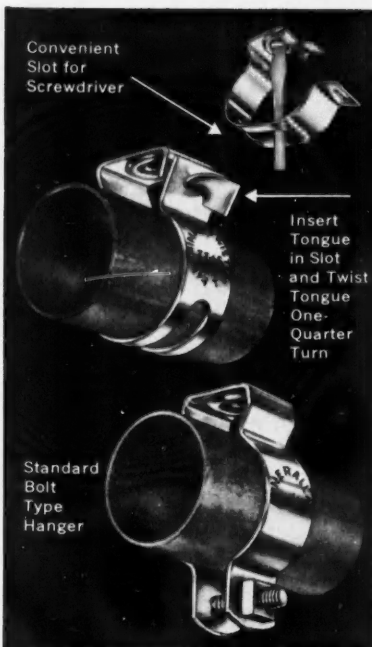
A new, transistorized, multi-station intercom system for interoffice communication has been introduced. Bogen TIX intercom series features an "Auto Respond" switch which makes it possible for a called station to reply without operating a station selector or talk-listen switch or knowing the calling station's location. TIX is a low-voltage intercom system which operates on one single 117-volt ac power supply. It also includes a "Record-A-Call" feature which automatically notifies a master that another master

Installation Economy with Time-Saving

"SIZE-MARKED" MINERALLAC[®]

"Minny-Twist"
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Standard Bolt Type Conduit Hangers



MINERALLAC "MINNY-TWIST" CONDUIT HANGERS "Minny-Twist" is this year's new addition to the ever-growing line of Minerallac Cable and Conduit Supports. Installs in 3 easy steps—(1.) Install hanger with screw or bolt.—(2.) Simply hang conduit in hanger.—(3.) Insert tongue in slot and twist tongue one-quarter turn with "Minny-Twist" closing wrench. Note illustration above.

MINERALLAC STANDARD CONDUIT HANGERS This is the original Minerallac Conduit Hanger ... tried, tested and proven for over one-quarter of a century in millions of electrical installations. Minerallac Standard Conduit Hangers are available in a complete range of sizes from 1/2" Thin-Wall to 4" Rigid.

Exclusive Feature!

Each Minerallac fitting is "SIZE-MARKED". All are clearly and individually stamped with its exact size for immediate identification and quick and easy handling. Ends time-consuming guesswork and costly mismatches in the stock room and on the job.



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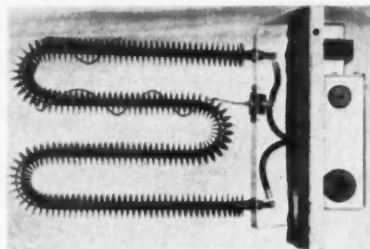
wishes to converse. TIX is available in two models, the TIX-11 master station for operation with up to ten other stations and TIX-24 master for operation with up to 23 other masters or remotes. Two types of remote stations are available. RIX-1 can initiate a call to one master station. RIX-6 can initiate a call selectively to any one of six masters.

Bogen-Presto Division of The Siegler Corp., Paramus, N. J.

Generator Units (29)

New "no-break" generator units are available for industry. Unit provides 100% continuous power to critical loads when commercial power fails. Unit is comprised of a Nordberg power chief engine, coupled to a statically excited motor generator through a heavy duty magnetic clutch. In the event of a power failure or a drop in voltage, the motor is automatically disconnected from the line, energizing the magnetic clutch which connects the flywheel to the engine crankshaft. Sets are available in 5 kw to 25 kw capacities.

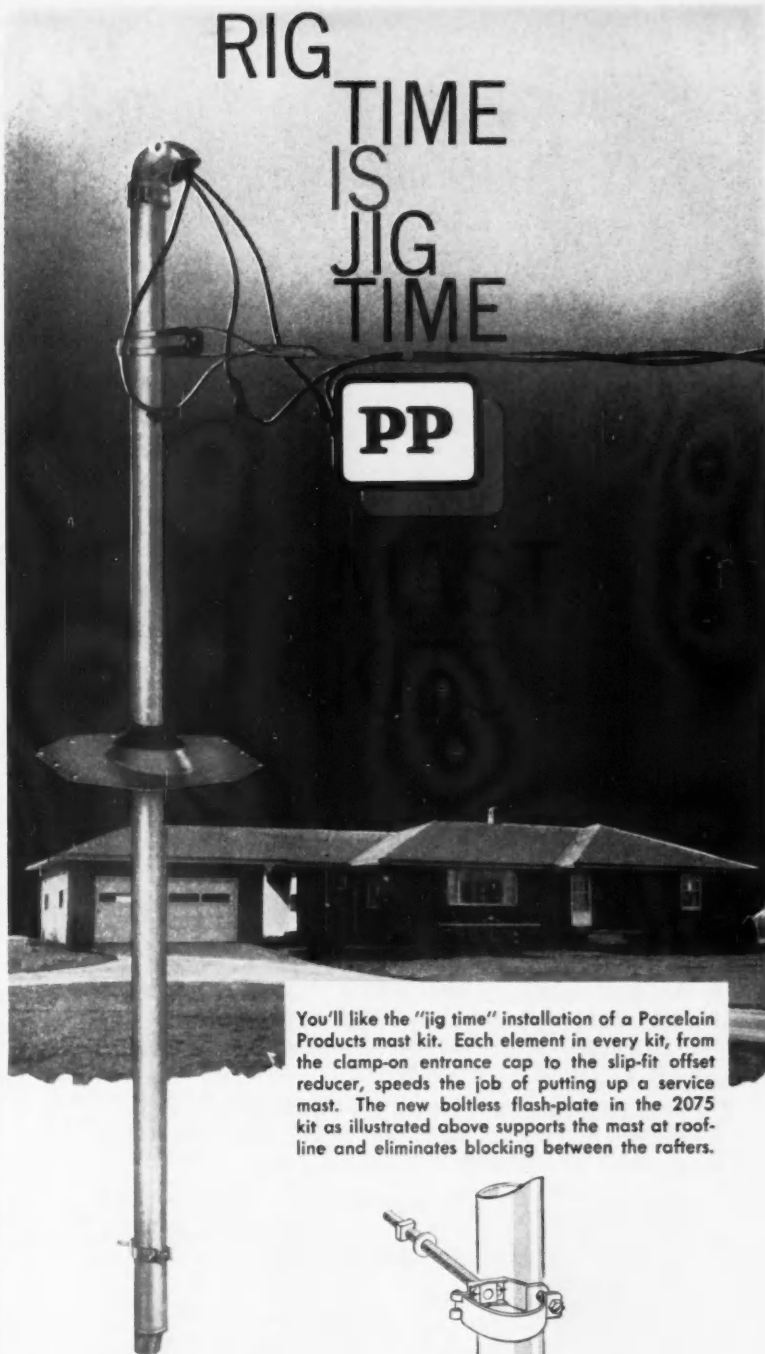
Automatic Power, Inc., 205 Hutcheson, Houston 3, Texas



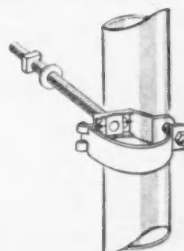
Duct Heater (30)

A new supplementary duct heater which provides additional heat generation for heat pump units by direct attachment to ductwork has been announced. It goes into new or existing ductwork without any dismantling of ductwork. Fail-safe type safety thermostat prevents overheating and eliminates any danger of fire. Heater's master package consists of a 5-kw heater element mounted on its bracket, complete with externally mounted low-voltage transformer, control relay, contactor, safety thermostat and terminal board all assembled in an electrical enclosure for field installation. Heater may be installed on any duct measuring 16 by 12 in. or larger.

Typhoon Heat Pump Div., Hupp Corp., Tampa, Fla.



You'll like the "jig time" installation of a Porcelain Products mast kit. Each element in every kit, from the clamp-on entrance cap to the slip-fit offset reducer, speeds the job of putting up a service mast. The new boltless flash-plate in the 2075 kit as illustrated above supports the mast at roof-line and eliminates blocking between the rafters.



AND NOW... the newest timesaver... in the 2085 kit is a split-clamp hanger with sideways adjustment. The "Adjusto-clamp" permits you to straighten mast after installation, or align mast with meter socket. It's the only adjustable clamp on the market. Included as standard items in all 2085 kits and available separately for 2" or 2½" pipe. Specify Cat. No. 7542 for 2", 7543 for 2½" pipe.

PORCELAIN PRODUCTS CO.

225 N. PATTERSON ST.

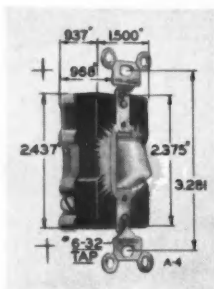
CAREY, OHIO



when light is needed quickly . . .
install a.c. "PRESSWITCH" with lighted button.

A tiny, subminiature, neon bulb in the button glows when the switch is **off**. Units are available in 15 and 20 ampere, 120 volt ratings in single pole, 3-way and 4-way types . . . also in 277 volt on special order.

As a pilot light, "Presswitch" is supplied in 15 and 20 ampere, 120 volt ratings, single pole only. Here, red button glows whenever switch is **on**.



No special wiring involved—costs pennies a year to operate. Write for complete A. C. Switch brochure.

A. C.

pressSwitch®

WITH LIGHTED BUTTON

Cat. No. 1257-1 15 amperes, 120 volts A. C.
single pole with feed-thru terminal

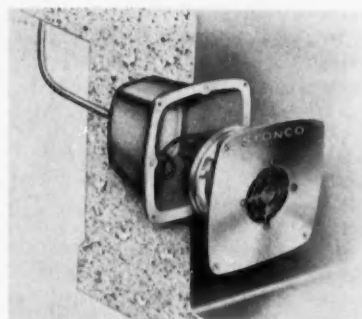


**HARVEY
HUBBELL
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Bridgeport 2

Connecticut

"Presswitch" is a trade mark of Harvey Hubbell, Inc.



Loudspeaker System (31)

A new underwater loudspeaker system permits swimming classes, water ballet troupes, and others engaged in synchronizing swimming or water sports, to hear instruction or music while practicing or performing. Other uses include in-water "mood music" for resorts, hotels, motels, cabana and country clubs, or residential installations. The fully-submersible speaker system is part of a complete UL-listed line of equipment designed specifically for underwater use.

Stonco Electric Products Co., 333 Monroe Ave., Kenilworth, N. J.

Trencher (32)

A new type lawn trencher, specifically made for installation of gas and electric lawn lights and lawn sprinkler systems, has been introduced. It weighs 180 lbs and will cut a trench 1½ in. to 3 in. wide and up to 24 in. in depth.

Modern Products, Inc., Exeter, Neb.

Power Plant (33)

New 110-volt, 60-cycle, ac, continuous-duty portable power plant handles lighting loads up to 1000 watts, powers hand tools with up to 10-amp rating. It is recommended for construction sites, trailers, campers, homes, standby or emergency needs. Rotary field generator has glass-insulated windings and transistor excitation. Two, 2-wire receptacles with ground are provided.

Dayton Electric Mfg. Co., 126 South Oakley Blvd., Chicago 12, Ill.

Substations (34)

A new line of secondary unit substations has been introduced. Using the CPR (Customer Preferred Rating) trademark, the line offers combinations of standard

meet about 85% of requirements in the 500-1500 kva range. CPR substations provide a completely electrically and mechanically coordinated assembly, from incoming line section to outgoing terminals, designed for easy installation. The CPR line offers substations for incoming voltages of 4.16, 12.0, 13.2 or 13.8 kv. Ventilated dry-type transformers rated at 500, 750, 1000 or 1500 kva without fan, or 750 1000, 1000/1333 or 1500/2000 kva with fan, may be obtained. Secondaries may be 480 delta or 480Y at all ratings and 208Y at ratings up to 1000 kva. Feeder breakers come in frames of three 1600-amp units or four 600-amp breakers.

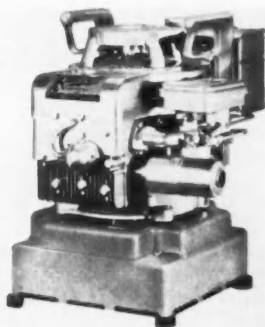
I-T-E Circuit Breaker Co., Philadelphia, Pa.

Connectors

(35)

A new series of large size liquid tight connectors has been added to this line. Fittings which formerly ranged from $\frac{1}{2}$ in. through 2 in., straight connectors are now available in 2½-, 3- and 4-in. sizes. They seal out all synthetic coolants, detergents, oil and other types of liquids used in industry. Fittings will not pull out under severe types of stress and are completely reusable.

Electrical Fittings Corp., 123 Smith St., E. Farmingdale, N. Y.

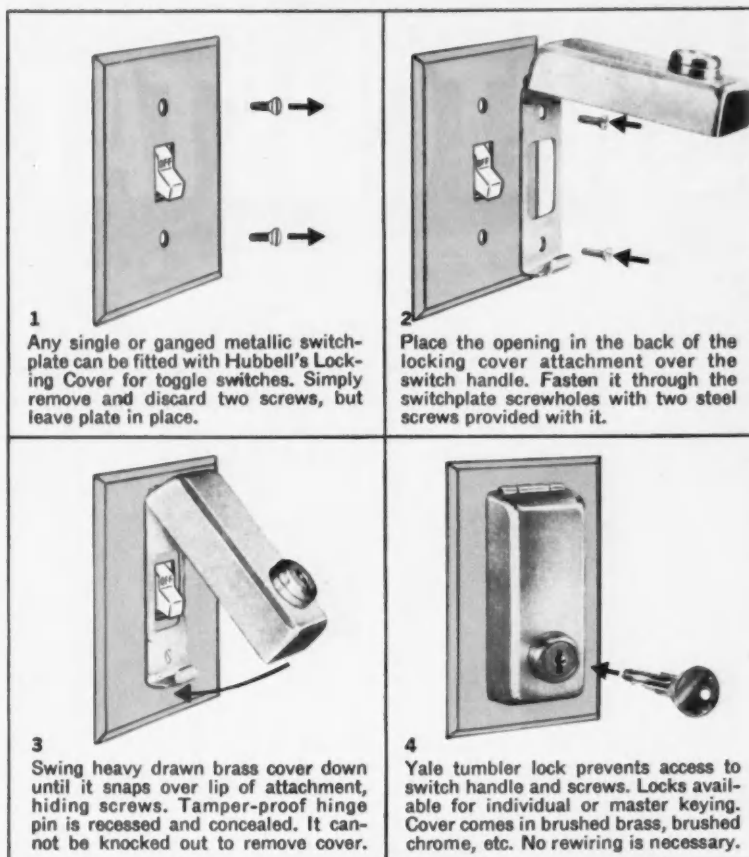


Electric Generator

(36)

A new electric generator that can be carried in a truck or car for instant use anywhere is available. 2250 watts of 110-volt ac provides a surplus of power for lights, electrical equipment and power tools. This 94-lb generator Mark II, is designed to be carried to the job. It has permanent ceramic magnets. A starter kit is available when using this unit as a standby source during a power failure.

Hearth Industries, 209 Brooklyn Ave., Wellsville, N. Y.



Locking Covers for Switches Sell Big to Institutions

Wherever there's a reason for preventing the unauthorized operation of switches, there's a reason for Hubbell's easy-to-install Locking Cover Attachment.

Equipped with a Yale lock, this rugged device is being bought in quantity by hospitals, corrective institutions, schools, and business organizations... despite the fact that it has never been advertised. A brief newspaper

article about it flooded us with over 1,000 inquiries from architects, product designers, builders, institutions, and safety officials.

There's nothing else like the Hubbell® Locking Cover on the market, and it comes as near to selling itself as any product we've ever developed. If you are a Hubbell distributor and are not pushing it now, Catalog Page 127-K can be your key to easy sales.



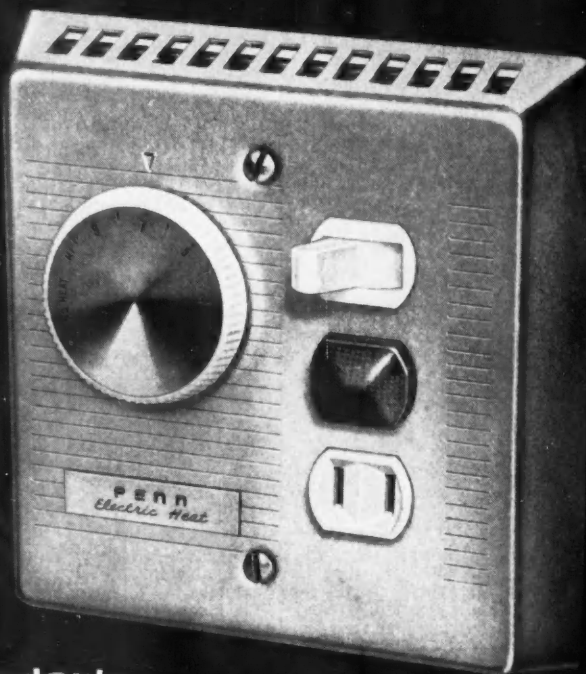
**HARVEY
HUBBELL
INCORPORATED**

Bridgeport 2

Connecticut

introducing...

SWITCHSTAT



today's most versatile

ELECTRIC HEAT THERMOSTAT

combines temperature control with interchangeable wiring devices!

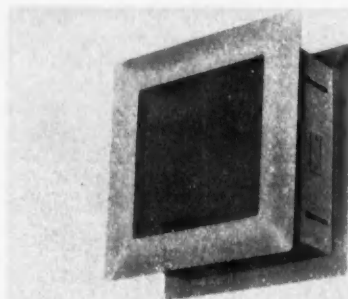
For bathrooms, kitchens, recreation rooms, and any place you need a room thermostat *combined in one mounting* with interchangeable switches or other devices . . . use the all-new Penn *Switchstat*.

Simple to install and easy to wire, *Switchstat* is beautifully designed to harmonize with any room decor. It offers more convenience than any other electric heat thermostat. You can easily install one, two or three wall switches . . . pilot light . . . convenience outlet . . . or any other combination of interchangeable wiring devices all in one attractive unit. Try it on your next job, you'll discover *Switchstat's* many advantages. Ask your wholesaler or write to Penn.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING,
APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES



Lighting Fixtures (37)

The "Wall-Thru" fixture is designed for lighting adjacent rooms simultaneously, through walls or partitions. Unit is ideal for motels, hotels, offices, commercial buildings and institutions. In residences, fixture may be used to provide combined hallway and closet lighting or kitchen and dining area lighting. Finishes include chrome, brass, copper, aluminum and painted eggshell. Dimensions of fixture housing are 7½ in. by 7½ in. by 4 in. A variation of the "Wall-Thru" is the "Aisle-Lite," a recessed unit engineered for any low-intensity step, aisle, or night-light installation. It is available in same finishes, and over-all size is 7½ in. by 4½ in. by 3½ in.

Markstone Mfg. Co., 1531 N. Kingsbury St., Chicago 22, Ill.

Personnel Boom (38)

New model PBHE personnel boom is equipped with its own 9-hp air cooled engine and fully hydraulic drive with electric solenoid control. A combination starter generator and battery are separate from the truck electrical system. Booms are available in platform-to-ground heights of 24, 28, 32 and 36 ft. Booms are elevated by a hydraulic cylinder from 16° below horizontal to 70° above horizontal. They rotate 360° continuously.

Utility Body Co., 1530 Wood St., Oakland 7, Calif.

Voltage Regulator (39)

A new ac line voltage regulator has been introduced which provides stepless voltage control for power loads up to 60 kva, single phase, and 180 kva, 3-phase. It is designed for industrial application. Regulator is basically a tapped transformer with an automatic switching arrangement to adjust the tap voltage. Load voltage is held constant by a monitoring system that senses small changes in the output

voltage. Regulator is available in 14 models, two are portable, with power outputs from 500 va to 60 kva (single phase, standard 120, 240 or 480 volts). Three single phase units can be connected 3 phase. Bulletin 22B01 is available.

Acme Electric Corp., Cuba, N. Y.

Lighted Ceiling System (40)

A new lighted ceiling system, known as Infiniflex, has been introduced. It uses a new Torsion-Ease hinge device which permits each panel to swing down for cleaning or relamping. Also uses noncombustible metals and self-extinguishing plastics. While supported by a T-bar grid, panels, having concealed joints, attach to bottom of T-bar, totally obscuring grid from all angles of view.

Integrated Ceilings & Grilleworks, Inc., 11766 West Pico Blvd., Los Angeles 64, Calif.

Static Inverter (41)

A new static inverter for operating standard fluorescent lamps from a 48-volt dc battery source has been developed. The inverter replaces present battery operated incandescent emergency lighting systems by using new or existing fluorescent lamps, ballasts and fixtures. Inverter produces 115 volts, single phase 60 cycle, ac power for operating 1500 watts of standard 60 cycle lamps and their ballasts. The inverter's size, 31 in. by 31 in. by 9½ in., and natural convection cooling will allow it to be wall installed or surface mounted. Hermetically sealed silicon controlled rectifiers are contained in the inverter section.

General Electric Co., Schenectady 5, N. Y.

Intercom System (42)

A dial-type loud speaking intercommunication system has been introduced. Called the LS Series Telecom, the system features compact dial-selection speaker-receiver units, a fully automatic private switchboard, and simple wiring. Unit permits four simultaneous conversations and 23 lines. Each line accommodates one master intercom station. Any number of extensions can be installed with each master station. Size is 7 in. wide by 6½ in. high and 7 in. deep.

Webster Electric Co., Racine, Wis.

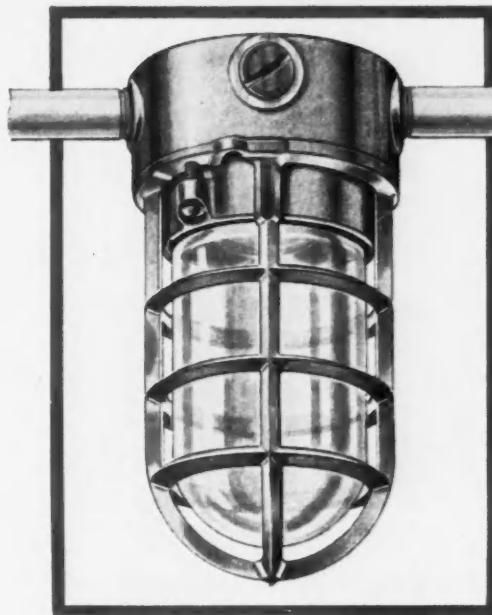
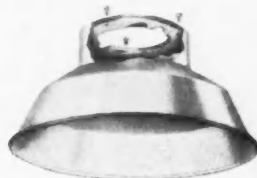
Quickly installed... a snap to service!

VAPOR* TIGHT

100 WATT
FIXTURE



Combination
junction box
has 4 holes and
3 plugs as standard.



*UL-listed-fixtures enclosed and gasketed.

Adalet VT fixtures give you the ruggedness and corrosion resistance of cast aluminum construction.

Installation — is easier with Adalet multiple tapped 4-way hub boxes.

Service — is a snap with the no-thread "twist-lift" bayonet-lock guard.

Globes — A choice of 7 colors in standard glass; 3 in heat resisting. Available for wall, pendant and outlet box mounting; 100 to 500 watt sizes.

Adalet

MANUFACTURING COMPANY
14300 Lorain Avenue
Cleveland 11, Ohio

Request
Vapor-Tight
Bulletin
E 360



Does emotional advertising influence you?

In advertising some consumer products — where there's little difference between one brand and another — emotional appeals may be most effective. But when it comes to industrial fire alarm systems, the differences are so great that facts are more convincing. Take these for example.

Fact No. 1 — Municipalities carefully investigate the various types of fire alarm systems before they make a choice. They want assurance that the system will be efficient, reliable and economical.

Fact No. 2 — The overwhelming majority of communities that have fire alarm systems have chosen Gamewell. Take a look the next time you pass one of those familiar red boxes on the street. Chances are you'll see the name Gamewell.

Doesn't it seem logical that the reasons Gamewell fire alarm systems have been selected by an overwhelming majority of municipalities hold true for industrial systems, too? Gamewell Flexalarm Systems for industry are the products of our more than 100 years of experience in providing fire protection. They offer completely automatic fire detection and alarm sounding, plus interconnection with other services — such as sprinklers.

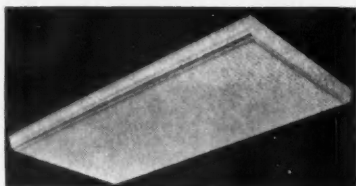
Get all the facts about Flexalarm Systems. Write The Gamewell Company, Dept. 1408, Newton Upper Falls 64, Mass. A Subsidiary of E. W. Bliss Company.



BLISS

Gamewell®

FIRST...WHEN SECONDS COUNT



Fluorescent Fixture (43)

A new surface-mounted commercial fluorescent fixture has been introduced. The "Slenderline," 3½-in. deep, has sculptured illuminated metal sides to blend it into the ceiling. It is furnished in two widths, 15½ in. or 25½ in. and in 2-, 4- or 6-lamp rapid start. A hinged diffuser frame swings down from either side or may be completely removed for relamping. Brochure is available.

Solar Light Manufacturing Co., 1990 N. Mannheim Rd., Melrose Park, Ill.

Air Curtain Fan (44)

The B15RF refrigeration door air curtain fan provides an invisible, thin wall of high velocity air that prevents the escape of cool air and entry of warm air. Fan fits any door opening with a simple, surface operation, requiring no structural changes. Air volume and direction can be adjusted with external controls. Fan is available with direct-connected 115 volts, one-phase or 220/440 volts, 3-phase motor. It can be manually controlled to operate when refrigerator room door is open or automatically controlled by use of a standard jam-type switch installed in door frame. One unit protects door openings up to 5-ft widths. For wider doors, two or more units may be used. Bulletin DB1-205 is available.

Ilg Electric Ventilating Co., 2850 N. Pulaski Road, Chicago 41, Ill.

Circuit Breakers (45)

Fusematic molded-case circuit breakers designed to afford safety and protection in systems where fault current may reach 100,000 symmetrical rms amperes. Available in ratings of 15 to 600 amps, 2- or 3-pole at 600 volts ac or 250 volts dc, the breakers feature a common-trip bar located adjacent to current limiters which ensures all breaker poles are automatically tripped if any of limiters function, if limiter housing is removed, or if an individual fuse is omitted from

housing. Fusematic circuit breakers combine and coordinate all advantages of Type AB molded case breakers and Econolim current limiting fuses to provide three-way protection for systems.

Federal Pacific Electric Co., 50 Paris St., Newark, N. J.

Switches (46)

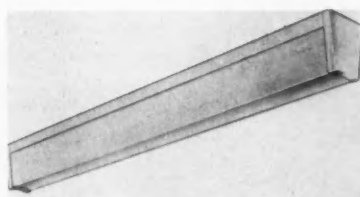
A twin 3-way wall switch for a single outlet box has been introduced. Feather-touch twin wall switch can be installed in a single-gang outlet box and operates in the normal vertical position. It is available with either two-way action circuitry or two single-pole switching and is installed together with a standard size 4½-in. by 2½-in. wall plate. For operation at 120 volts, the switch is rated at 15 amps.

H. J. Theiler Corp., Whitinsville, Mass.

Intercom System (47)

Wireless and fully transistorized, the new Model FW-40 2-station system plugs into ac outlets. Cabinets are formed of high impact styrene compound. It is offered in systems of 2, 6 and 12 stations. The 2-station model may be expanded by adding additional single station units to the system so long as they may all be plugged into ac lines.

Fanon Electronic Industries, Inc., 439 Frelinghuysen Ave., Newark 14, N. J.



Corridor Fixtures (48)

New D-Series corridor fixtures use prismatic principle for corridor lighting. In both the 1- and 2-light D-Series fixtures light is distributed evenly and adequately on both vertical and horizontal planes. End pieces and center supports of the Series are die-cast and the prismatic, clear polystyrene lens is firmly attached. D-Series comes in 4- and 8-ft lengths. The 1-light is 4½ in. deep, the 2-light is 6½ in. deep. Both occupy 4½ in. on the ceiling.

Curtis-Electro Lighting, Inc., 1536 S. Paulina St., Chicago 8, Ill.



CONTRACTORS' REPORT on Greenlee Job-Profit Tooling

"GREENLEE TOOLS GIVE US THE SPEED AND ACCURACY WE NEED to do high-quality work and still stay on top of a rugged minute-to-minute schedule." That's the report from Joseph Bartolone, superintendent for Gerson Electric Construction Company, electrical contractor for the new \$36 million Marina City in downtown Chicago.

Turn the page for the story of how Greenlee Job-Profit Tooling helps Gerson Electric set the work pace for other contractors on this fast-moving project.

Joseph Bartolone, superintendent,
Gerson Electric
Construction Company,
Chicago, Illinois

TOOLS FOR CRAFTSMEN
GREENLEE





MARINA CITY—A City Within a City

Sponsors: Building Service Employees International Union

Owners: Marina City Building Corporation,
William L. McFetridge, President

Management: Marina Management Corporation,
Charles R. Swibel, President

The twin 588 ft towers will be the world's tallest reinforced concrete apartment building, having 896 apartments; 180,000 sq ft of office space; a 54-lane bowling alley; year-round swimming and ice-skating facilities; a gymnasium; a 1700-seat theater; 12,000 sq ft of auditorium space; scores of restaurants and shops; parking for 900 cars; and facilities for 700 boats on the Chicago River.

CONTRACTORS' REPORT (continued)

An on-the-job report on Greenlee Job-Profit Tooling from Joseph Bartolone, superintendent, Gerson Electric Construction Company.

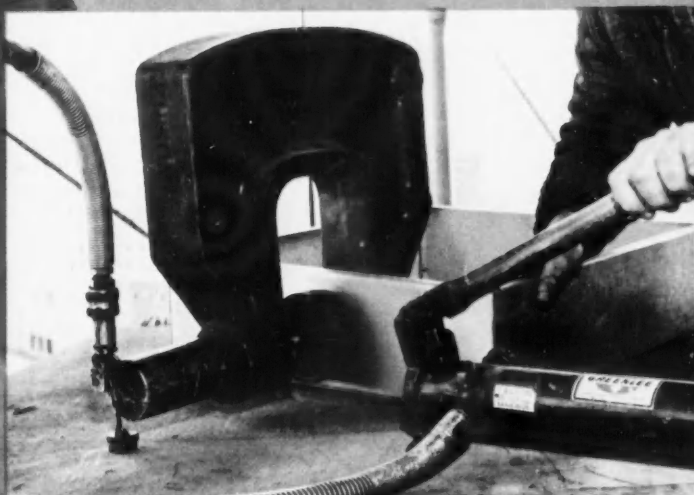
"As pacesetter on this job, we need the most efficient tooling we can buy... and that means GREENLEE"

"If we lose an hour, we can throw pouring crews, carpenters, plumbers, plasterers, and scores of other workers off schedule. Time losses soon pyramid into hundreds of man-hours and thousands of dollars.

"Greenlee tools have enabled us to stay on schedule and perform the kind of top-grade work needed on this job. That's why I'll recommend Greenlee tools!"



"There's no room for bending errors on this job. We're putting in 80,000 lb of ½" to 6" galvanized conduit a month. In all, close to a million feet will be installed. Every piece has to fit because we don't have the time to redo any of the work. With Greenlee tools like this one-shot power bender (No. 884) we can do the job right the first time."



One of the most versatile tools on the Marina City project is this Greenlee heavy-duty, one-shot bender. It handles $\frac{1}{2}$ " to 4" aluminum or galvanized steel conduit and makes up to 90° bends with one ram stroke, in one setting. Driven by a Greenlee 798AC-SA power pump (shown), a 90° bend in 4" conduit takes less than 4 minutes.

Gerson is using a variety of other Greenlee Job-Profit tools on this job, including the 880 one-shot bender ($\frac{1}{2}$ "-2"); 764 thin-wall hand bender ($\frac{3}{8}$ "- $\frac{3}{4}$ "); 1810 "LITTLE KICKER" ($\frac{1}{2}$ " E.M.T.); 765 heavy-duty cable puller; 7646-A knockout punch driver; 768 hydraulic hand pump; and the 798 and 1729 hydraulic power pumps.

GET THE FACTS! Fill in the reverse side of this postage-paid reply card and mail it today.

"Our tools have to be fully portable and as compact as possible," Bartolone states. "Work on this job ranges from the bottom to the top of the two 60-story towers. We just don't have the time or facilities to move heavy, cumbersome equipment around."

"Greenlee tools are lightweight, easy to move and set up. This knockout punch (Greenlee No. 1732) weighs only 56 lb, including hand pump and can be carried and operated by one man. As a result my electricians spend more time working and less time wrestling equipment. The time saved on each operation mounts up and makes a big difference on the final balance sheet."

Close-up shows knockout punch set up to make openings for 3" conduit. One-shot action quickly punches holes for $\frac{1}{2}$ " to 4" conduit in up to 10-gauge metal *without* predrilling or step-up punching. The smaller No. 1731 is also available to punch holes for $\frac{1}{2}$ ", $\frac{3}{4}$ ", and 1" conduit. Both models can be operated by same hand or power pump used on Greenlee hydraulic benders.

For complete information on other Greenlee Job-Profit Tooling and services, please turn the page.

First Class
Permit No. 291
Rockford, Ill.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States.

4c Postage Will Be Paid By:

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2043 Columbia Avenue

Rockford, Illinois

Attention: SALES DEPARTMENT





**GREENLEE
JOB-PROFIT
TOOLING ...
COST
CONTROL
FOR CONTRACTORS**

Bending problems? Call the Greenlee Job-Profit Tooling team nearest you. The Greenlee factory representative and Greenlee tool distributor work as a team to help you cut costs. They will come to your job site completely equipped to demonstrate the latest in worksaving methods and tools . . . help you calculate savings possible with modern Greenlee equipment. They provide important technical data and tool application facts — aids not available from any other source.

Ask your Greenlee tool distributor to arrange a Job-Profit Tooling demonstration soon. There is no obligation, of course.

GREENLEE TOOL CO.

2043 Columbia Avenue

Rockford, Illinois

Save time...eliminate the guesswork in pipe bending with this new easy-to-use pocket-size calculator. It quickly figures all data needed to lay out and bend offsets, one-shot 90° bends, "legs" or "stub-ups" in ½" to 4" conduit or pipe. Use it with Greenlee Models 880, 883, 884, and 777 hydraulic benders. Order directly from Greenlee Tool Co., Rockford, Illinois. Price \$1.00 each.



Mail this postage-paid reply card today.

Please send me more information on the following Greenlee tools:

- ☐ Hydraulic benders ☐ Hand and power bits
☐ Hand benders ☐ "Little Kickers" for 1/2" or 3/4" E.M.T.
☐ Knockout punches and drivers ☐ Other tools _____
☐ Cable pullers _____
☐ Please have a representative call to discuss Greenlee Job-Profit Tooling.

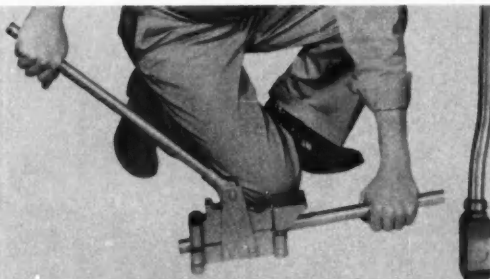
Name _____

Title _____

Company _____

Address _____

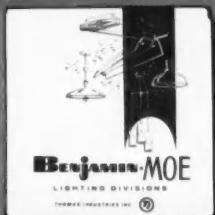
City _____ Zone _____ State _____



Bend offsets in E.M.T. in just 2 seconds with a Greenlee "Little Kicker."

Form perfect "box" offsets in one shot for ¾" or ½" E.M.T. Save up to 12c material per connection and cut hours off every job. Two models: 1810 for ¾" E.M.T.; 1811 for ½" E.M.T. Order direct or write for Bulletin E-320.

cutlass



**NEW FROM
THOMAS
INDUSTRIES**

"Light-frame" design— new from Benjamin!

A new "light-frame" is the keynote of Cutlass design. The "light-frame" eliminates diffuser door, gives more luminous area per unit. Only 4-1/8" deep, the Cutlass saves space, is easy to install and service.

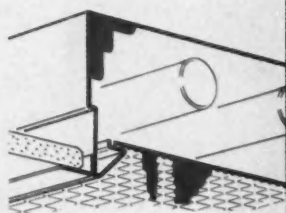
FOR MORE COMPLETE INFORMATION, TURN PAGE ►

The Cutlass is in stock now at your Benjamin distributor

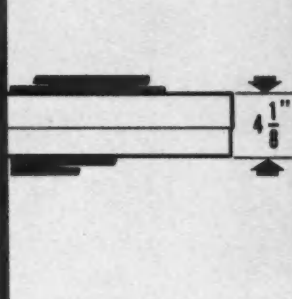


**NEW FROM
THOMAS
INDUSTRIES**

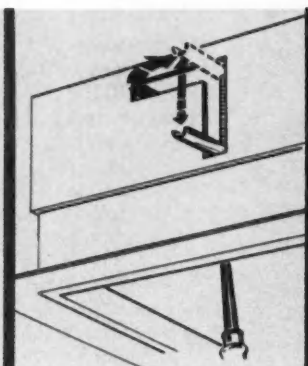
Cutlass Troffers save money, space, and installation time



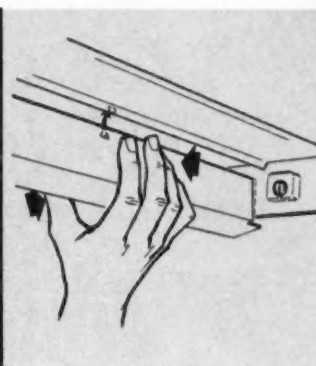
The regressed lens eliminates door frame and associated dark area—more luminous area per fixture.



A new frontier in shallowness only $4\frac{1}{8}$ " deep. More free space between floors.

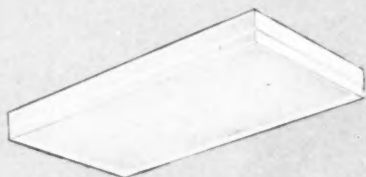


New Swivel-bar hanger allows fast installation in all suspended ceiling types, requiring flange type troffers. Eliminates yokes.



New snap-in channel cover allows installation and wiring to be completed in a matter of minutes.

Here's the new line of Benjamin lighting classics for 1962



CLIPPER — Classic New Modular



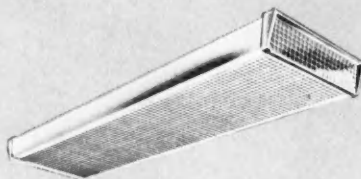
CUTLASS — New "Light-Frame" Troffers



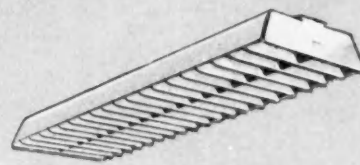
CARAVEL — Dual-Lens Wrap-Around



CORONADO — With 3-in-1 Diffuser



CATALINA — Nation's First Choice



VERSATEER — For Classroom Lighting

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FREE
New Lighting Classics Catalog.
Send for your copy today.



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DIVISION
THOMAS INDUSTRIES INC.
207 E. Broadway, Louisville 2, Kentucky
Benjamin • Moe Light • Star Light • Enchanté



Exit Lights

(49)

A complete line of compact lighted exit units, known as Pathfinder, has been introduced. The line combines unique circuitry with a solid-state electronic device to deliver guaranteed burning life of 50,000 hours for the four lamps illuminating each sign. Signs employ 7-watt filament lamps which are operated at reduced voltage. Pathfinder units are available for six different mountings with a choice of red or green letters or background. All basic signs, except recessed, measure 13 in. by 9 in. overall with a thickness of less than 2 in. at top tapering to just over 1 in. at bottom. Literature is available.

The Miller Co., Meriden, Conn.

Transformers

(50)

New single- and 3-phase dry-type transformers, Types EP, EPT, DT-3 and DS-3, from 3 to 500 kva are available. They are for indoor installations such as institutions, commercial buildings and industrial plants where concentrations of people are present. Type EP transformers can be installed anywhere, in any position—on floor, wall or ceiling. Types DS-3 and DT-3 are for floor, platform or ceiling mounting. Application of silicones and sealed insulation systems prevents arc-over and tracking caused by excessive dust and humidity.

Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

Intercoms

(51)

A new series of transistorized intercoms for office, factory or home use has been introduced. "Series T" intercoms, are designed for unrestricted communication between master station, between single master and multiple remote stations or between masters and remotes intermixed in any combination. The TIA-6 is a 6-station master with volume control, press-

to-talk bar and 7-position selector, including an "all-call" position to signal all remotes and a "mute" position to attenuate background noise from remotes. Similar features are found on the TIA-12 master station designed for operation with 11 other stations.

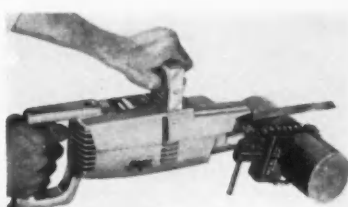
Bogen Communications Div., Lear Siegler, Inc., Paramus, N. J.

Cable Trimmer

(52)

A newly developed power transmission cable trimmer which will accommodate 85 sizes of ACSR cable has been announced. Designated the RIDGID No. 87 ACSR cable trimmer, tool is designed for removal of aluminum strands of cable prior to splicing operations. Capacity of tool is from 8 to 1,780,000 circular mils. Twelve stock bushings are available within the 336,400 through 954,000 mils range. Other sizes within the over-all range of 8 through 1,780,000 mils range can be supplied on request. Bushing holder, which consists of two hinged halves that are tightened onto the cable using a wing nut, prevents unravelling of outer strands.

The Ridge Tool Co., 400 Clark St., Elyria, Ohio



Electric Saw

(53)

A new portable electric hack saw with a built-in vise has been announced. It combines a reciprocating-type saw with a wrap-around, chain-tightening vise which can be adjusted to hold bar stock, pipe and other materials from 3-in. to 5-in. dia. It is known as Model 702 Recipro saw and can operate at two speeds—1,000 or 1,400 strokes per minute. Blade is mounted off-center for cutting close to walls and corners, and is reversible for cutting upwards as well as down. An auxiliary handle on top adjusts to three different positions for either left- or right-handed operation or it may be removed entirely for working in confined areas.

Skil Corp., 5033 Elston Ave., Chicago 30, Ill.

You're On Top of the Job with **BAKER SCAFFOLDS** **REGARDLESS**

... if your job calls for off-the-floor work ... there's a Baker Scaffold to fit your need.

Baker now offers three types of transportable scaffolds to keep pace with the job.

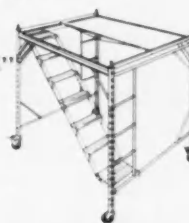


BAKER SCAFFOLD

—the original, transportable scaffold for quick, easy maintenance at nominal heights.

BAKER MODEL "K" SCAFFOLD

—for larger work platform area.



BAKER TELE-SCAF

(formerly Atlas Hi-Lift)—a telescoping scaffold for those special jobs that require frequent attention or special equipment.

Baker Scaffolds are designed for getting off-the-floor work done faster—pay their way many times in labor time saved.

Also, there are many accessories for Baker Scaffolds to make your particular job even easier. Why not get full facts now.

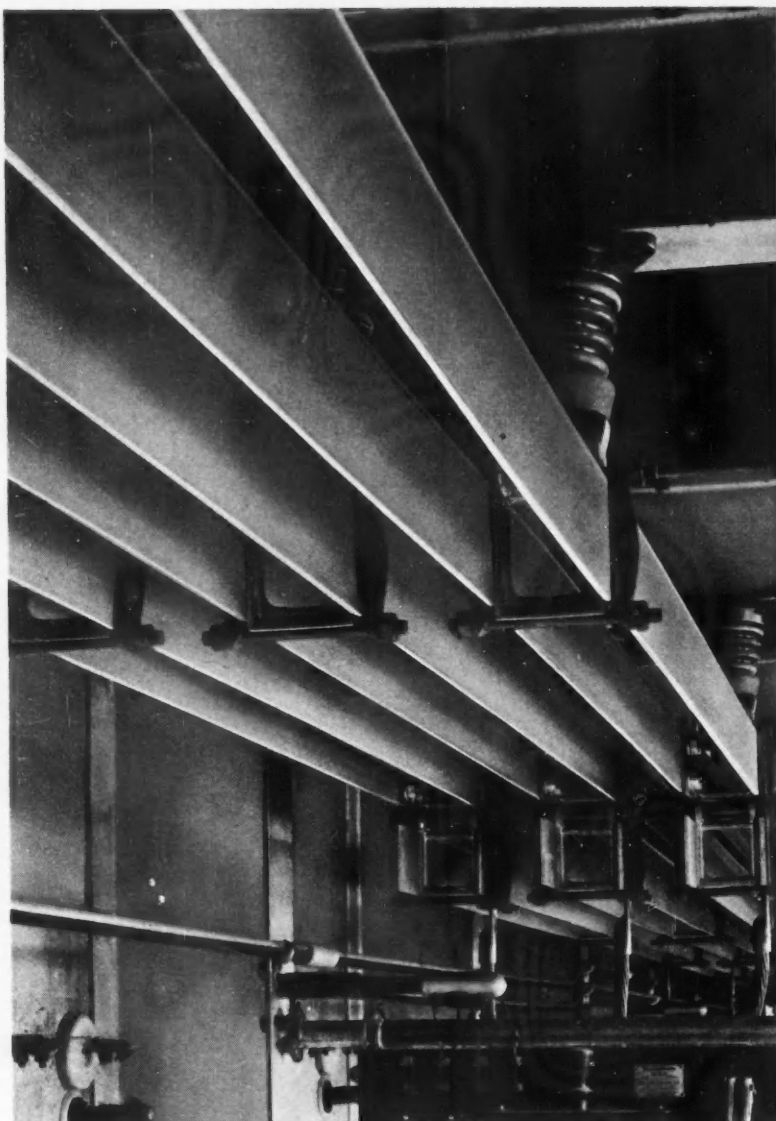
Write today for complete data on the Baker Scaffolds.

BAKER SCAFFOLDS

DESIGNED for PORTABILITY • BUILT for DURABILITY

BAKER-ROOS, INC.

P. O. Box 892, Dept. 623 Indianapolis 6, Ind.
DISTRIBUTORS IN PRINCIPAL CITIES



This bus costs half as much as copper

It's aluminum, of course. It weighs less than half as much as copper (for equivalent capacity). It's easy to bend, form, drill, cut, punch and weld. And bolted joints of aluminum to aluminum or aluminum to copper are easily made with standard procedures. □ It's corrosion resistant, too... even in highly contaminated atmospheres such as exist in or near chemical and other industrial plants and in sea coast locations. □ Before you expand or modernize your capacity, get all the facts about Alcoa aluminum bus conductor. We supply it in a wide variety of shapes and sizes for all applications. Just call or write your Rome-Alcoa representative or Rome Cable Division of Alcoa, Dept. 7-92, Rome, New York.



Instrument

(54)

New "goose-neck" version of the Photo-Tachometer gets around and over obstacles, to measure speeds of inaccessible moving parts, in dangerous and sometimes out-of-sight locations. This "Snorkel" tachometer permits one to be as far as 12 ft away with direct reading indicating unit when making a measurement. The range is 0 to 12,000 rpm. Base of the Snorkel extension has an Alnico magnet for attachment to any ferrous metal surface. Flexible shaft allows positive and fixed aim of photocell and light beam. Instrument operates on its own transistorized power-pack. It is operated by pressing button above the scale and reading speed directly in rpm. Bulletin is available.

James G. Biddle Co., 1316 Arch St., Philadelphia 7, Pa.

Circuit Breakers

(55)

In response to increased use of larger 3-phase air conditioners in homes and other occupancies, FPE has developed 240-volt 50- and 70-amp 3-pole Type NA delta circuit breakers which fit into single-phase Stab-lok panels and provide protection for these circuits. Cat. No. L3P50 and L3P70 are designed to stab into two panel busses and receive line connection of third phase at solderless terminal on gutter side of device. Units are suitable for all 3-phase LV systems and are furnished with a hasp to permit locking of circuit in "off" position.

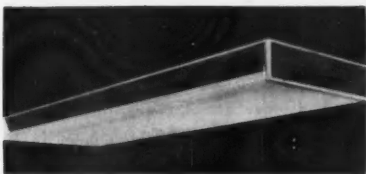
Federal Pacific Electric Co., 50 Paris St., Newark, N. J.

Communications System

(56)

Two communications systems for nursing homes and senior citizen retirement centers have been announced. One system is manual and the other is automatic. Both systems provide closer patient-nurse contact or staff-resident contact communications, staff intercom, critical bedside monitoring, paging, and facilities for emergency security and evacuation—alert signal and voice directions. With the deluxe automatic system, the rooms to be monitored are preselected on an associated annunciator panel. The master station is set and all monitoring is done individually and automatically with each room on a pre-determined time cycle.

DuKane Corp., St. Charles, Ill.



Fluorescent Lighting (57)

A fluorescent lighting device combining oil-finished woods with engineered performance and prismatic lens diffusers for light control, has been announced. Called the Madera, it may be surface or stem mounted, individually or in rows. Unit is ideal for store, office, bank, or residential areas. To coordinate with this fixture is a companion wall unit with matching construction, performance, design; for use in corridors, mounted on walls, or close to ceiling, or individually over hospital beds, desks, merchandise displays, restaurant booths, couches and other areas. Literature is available.

Silvray Lighting, Inc., 100 W. Main St., Bound Brook, N. J.

Photoelectric Set (58)

Beam-O-Lite is a ready-wired photoelectric set, available with either a counter or an alarm. It is designed especially for rough, industrial service. It can be used to count anything or signal an alarm when the beam of light is interrupted or established. Condulet-type housing is employed for both the exciter lamp and photoelectric receiver. Both units are protected against water spray, oil and dirt and can be operated indoors and outdoors. Since receiver unit includes control relay, cables can be extended any length desired.

Strandberg Engineering Laboratories, Inc., 1001 South Elm St., Greensboro, N. C.

Intercom System (59)

A completely transistorized intercom system, Protecto-Com, is designed for industrial as well as residential use. The entire system is powered by a door chime transformer. It incorporates a door answering service from an indoor station with room-to-room communication at all times. It includes transistor amplifier, indoor station, outdoor or outer office station, 50 ft of 8-conductor cable and 50 ft of 2-conductor cable.

Progress Webster Corp., Rochester 21, N. Y.



VAP-OIL-TITE CONNECTORS

- for use with liquid-tight flexible, metallic conduit
- absolute water and oil-tight seal — vapor, dust, grit can't penetrate



STANDARD SIZES — 3/8" to 2"

Available in 3 styles — straight, 90° angle and 45° angle. U.L. and J.I.C. approved. Fit both EF and UA conduit. Seven sizes for each style from 3/8" to 2" conveniently packaged in lots of 5 to 100, or by carton...priced right!

LARGE SIZES—2½", 3", 4"

Straight style only. Double O-ring neoprene seals prevent foreign matter penetration—nothing can get through! Extra long skirt prevents damage to conduit. Three sizes, 2½", 3" and 4" packaged individually — at the right price!



EASIEST TO APPLY--NEVER PULL APART

The *only* completely reusable connectors for OEM, replacement and maintenance, and machinery applications where a positive seal against water and oil is a must!

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1041-I Park Ave., Sycamore, Ill.

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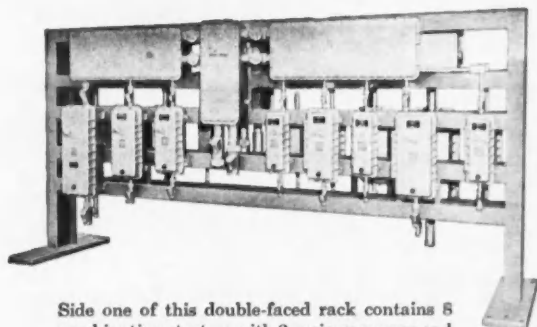
"Are they*
delivered ready to
install?"



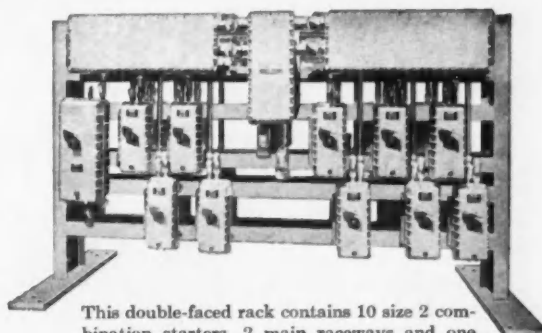
*** KILLARK SWITCH RACKS**

This rack is 20 feet long, 7½ feet high, and weighs 8700 pounds. Side one, shown here, contains 18 combination starters, with wiring through 4 raceways. Main terminal blocks are placed in a junction box. Side two (in back) contains 17 combination starters with terminal box and 4 raceways. Galvanized steel mounting frame is painted with two coats of zinc-rich paint. Built in accordance with N.E.C. Code, Article 500, governing Class 1, Group D, Division 1, hazardous areas.

Killark
ELECTRIC
MANUFACTURING
COMPANY



Side one of this double-faced rack contains 8 combination starters with 2 main raceways and one main terminal box. The back side contains similar equipment. Total estimated weight 4,952 pounds. Length 15', height 7'10".



This double-faced rack contains 10 size 2 combination starters, 2 main raceways and one main terminal box on each side. Weight 4,828 pounds, height 7'10".

**"You bet they are!
Designed, assembled, wired,
sealed, shipped. Ready to
hook up to power."**



"Les Sparks"

Killark's Bob Grimm, Assistant Sales Manager, is shown on the opposite page, by one of four (front-back) switch racks recently built for a Texas oil refinery. Two others are illustrated above.

All-aluminum control centers are custom-designed by Killark engineers from the broad selection of Killark enclosures: motor starters, disconnect switches, circuit breakers, panel boards.

Killark switch racks offer several really big advantages. Because they're aluminum, they're lightweight, rust-proof, non-sparking. They're versatile; you can specify them as large or small, as simple or complex as you require. They can be built for indoor or outdoor location, for hazardous or non-hazardous environments. All boxes are ribbed for higher strength and faster heat dissipation, rectangular for more compact assembly, front-opening for easier access and servicing.

Killark does practically all the work for you, from blueprints to assembly to wiring to sealing to shipping. The racks arrive at your plant ready to hook up to your power.

If you would like further information about Killark custom-assembled switch racks, drop us a line and we'll be happy to give you complete details.

Vandeventer and Easton Ave. St. Louis 13, Mo.

In Canada: Killark Electric of Canada, Ltd., 421 Islington Ave. South, Toronto 18, Ont.

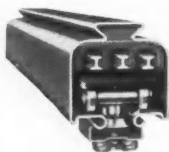
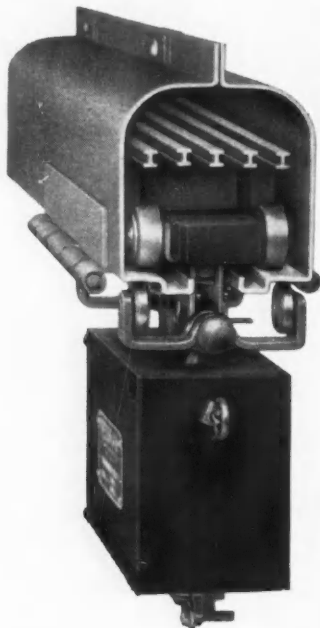
6148

NEW FEEDRAIL®

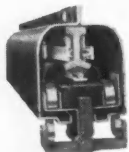
STEEL ENCLOSED 4 and 5-POLE ELECTRIFICATION SYSTEMS

SAFE for

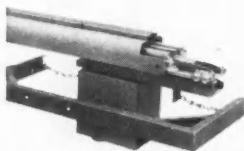
- Crane Bridge and Monorail-Hoist Control Circuits.
- Power and Control Circuits on Low-tonnage Monorail Systems.
- Moving Power Take-off on Conveyorized Electrical Test Lines.
- Control of Power and Control Circuits on Machine Tools.
- and other applications requiring a Multiple Conductor Moving Power Source.



FEEDRAIL "60" — For low-tonnage hoists, cranes, portable tools, lighting, business machines, cutting and sewing room equipment, etc. Continuous rating—60 amperes. Intermittent rating—90 amperes. Send for Bulletin No. 90.



FEEDRAIL "100" — For cranes and hoists, stackers, portable tools, production and test lines, machine tools, hangar doors, etc. Continuous rating—100 amperes. Intermittent rating—150 amperes. Send for Bulletin No. 85.



FEEDRAIL "HEAVY DUTY" — for heavy duty cranes and hoists, large machine tools, conveyor assembly lines, etc. Continuous ratings—225, 375 and 500 amperes. Send for Bulletin No. 80.

Feedrail® steel enclosed 4 and 5-pole Systems are the modern, safe way of providing electrification where multiple conductors are required for moving or movable equipment.

Designed primarily to counteract unsafe and exposed wiring methods on crane bridge and monorail-hoist control circuits, these Systems adapt themselves to many other uses in new plants or as replacement of hazardous equipment in existing plants.

Fool-proof safety features have been incorporated to protect operating and maintenance personnel and plant equipment. You'll find its long life, low maintenance and dependable service economy factors in plant operation.

Completely standardized units, accurately and ruggedly constructed, are factory assembled for quick, easy installation. Just connect the units together to form runs of any required length or curvature. Its compactness permits a variety of mounting possibilities. By means of parallel runs, any number of conductors can be obtained.

Track sections are rated at 60 amperes per pole continuous service; trolleys at 15 amperes per pole. For complete data send for Bulletin No. 95.

Catalogs & Bulletins

(60) **STREET LIGHTING.** 8-page Bulletin GEA-7689 describes new luminaire and transformer assemblies for residential underground distribution systems. General Electric Co.

(61) **POLARIZING PANELS.** 8-page Brochure OD-1071 entitled "Polarizing Light Panels" includes non-technical description of polarization, recommended uses and benefits of polarized light. Day-Brite Lighting, Inc.

(62) **BALLASTS.** 32-page catalog describes ballasts for fluorescent lamps for all indoor, and outdoor, commercial, industrial and residential applications. Universal Manufacturing Corp.

(63) **CAPACITORS.** Bulletin GEZ-3553 describes 50- and 100-kvar, 2400-volt units for underground installations for single and 3-phase primary circuits, 60 cycles, 2.4 and higher kv, or 3-phase secondary network systems, 60 cycles. General Electric Co.

(64) **FLOODLIGHTS** to meet all lighting needs are illustrated in 4-page pamphlet including full line of mercury vapor and quartz-iodine outdoor floodlights and the mercury vapor indoor luminaire. Wide-Lite Corp.

(65) **CIRCUIT BREAKERS,** panelboards, safety switches, multiple dwelling service equipment and transformers are described in 44-page Product Digest. Zinsco Electrical Products.

(66) **LIGHTING.** 10-page booklet describes lighting equipment for parking areas, malls, building facades and signs that will enhance any style shopping center. J. H. Spaulding Co.

(67) **CAPACITORS.** 12-page Bulletin GEA-7197 describes 100-kvar capacitor units for pole-top and open-rack applications, plus additional equipments such as stack-rack equipment. General Electric Co.

(68) **ELECTRIC POOL HEATING.** Chromalox electric pool heating equipment for use in new and existing swimming pools is presented in Bulletin PE-102-3. Edwin L. Wiegand Co.

SOLD BY MORE THAN 1,000 ELECTRICAL DISTRIBUTORS FROM COAST TO COAST



Never Becomes Obsolete

FEEDRAIL CORPORATION

Subsidiary of Russell & Stoll Company, Inc.
125 BARCLAY STREET • NEW YORK 7, N. Y.

SPECIALY QUALIFIED REPRESENTATIVES IN PRINCIPAL CITIES

(69) **SAFETY SWITCHES**, load centers, metering equipment, circuit breakers, lighting panelboards, power and distribution panelboards and bus duct systems are covered in 132-page 1962 Speedfax catalog. I-T-E Circuit Breaker Co.

(70) **LUMINAIRE**. 4-page Catalog LTG-35 describes the HO series on their LUXaire luminaires which are four-lamp assemblies available in 4, 6 and 8 ft sizes. Pfaff & Kendall.

(71) **EPOXY-WRAP METHOD** for cable splicing, terminating and repair is described in 16-page Bi-Cast TD-2 brochure. Bishop Mfg. Corp.

(72) **OUTDOOR HOUSINGS**. Standard all-steel and aluminum outdoor housings for 5- and 15-kv switchgear are described in Bulletin 18C1124. Allis-Chalmers Mfg. Co.

(73) **CLOCK**, program and communications systems, emergency lighting equipment and fire alarm systems are covered in 8-page Catalog 254. Standard Electric Time Co.

(74) **EXIT LIGHTING**. Bulletin No. EX2-462 contains information about exit lighting units illuminated with fluorescent or incandescent lamps. Art Metal Lighting Div., Wakefield Corp.

(75) **EXPLOSION-PROOF HOUSINGS**. 36-page Bulletin 562 lists expanded line of UL-listed cast-aluminum, explosion-proof housings, boxes and fittings. Adalet Mfg. Co.

(76) **LIGHTING**. 60-page Catalog W-462 includes complete specifications on commercial and industrial lighting units—fluorescents, incandescents and luminous ceilings. Wakefield Lighting Div., Wakefield Corp.

(77) **OUTDOOR LIGHTING**. 48-page Brochure GEA-72223A entitled "Area Lighting Designer's and Buyer's Guide" describes line of mercury, fluorescent and filament luminaires for area lighting. General Electric Co.

(78) **TELEPHONE SYSTEM**. New bulletin describes private automatic telephone systems. Communications Systems Div., Dukane Corp.

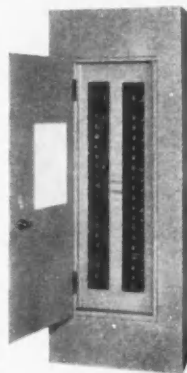
(79) **LIGHTING**. 12-page brochure describes complete line of recessed and wall mounted residential lighting fixtures. Marvin Electric Mfg. Co.



ACCENT ON VALUE

3 PHa- SE

**load centers to 200 amp
with "TWIN"™ breaker
flexibility**



Now, a full line of 3-phase, 4-wire load centers with 12 to 42 circuits, 125, 150 and 200 amperes. Sequence phased for maximum versatility, these 1, 2 and 3-pole breakers save installation and maintenance time, reduce cost. Another G-E product development to make your job easier, more profitable.

For complete information, call your G-E Distributor today. Or write General Electric Company, Circuit Protective Devices Department, Plainville, Conn.

* Trade Mark

GENERAL  ELECTRIC GENERAL  ELECTRIC



ACCENT ON VALUE

30 AM- pere "TWIN"™

**gives you two 30-Amp,
240 Volt Circuits in
the space of one**

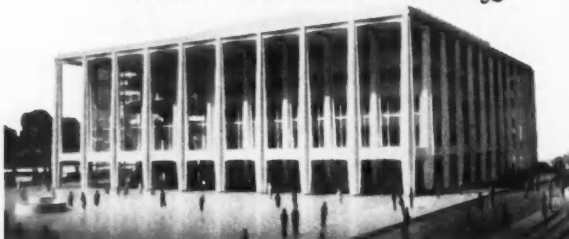


New double 2-pole "TWIN" allows two 240 volt circuits in the space of one conventional size two pole breaker. Save time and space, increase efficiency. Also available in 15 and 20 amp. ratings. Another new G-E product development to make your job easier, more profitable.

For complete information, call your G-E Distributor today. Or write General Electric Company, Circuit Protective Devices Department, Plainville, Connecticut.

* Trade Mark

Lighting News 
 AT **PHILHARMONIC HALL**
 IN NEW YORK'S LINCOLN CENTER
 FOR THE PERFORMING ARTS 



Max Abramovitz, Architect

...another
 installation
 by **KLIEGL**

Keynoted throughout by newness, this showcase of the symphony introduces a wide range of stage and interior lighting innovations. Designed by Richard Kelly—and developed and produced by Kliegl Bros., lighting at the Philharmonic promises to establish trends for years to come.

Though yours may be a project far different from a Lincoln Center, the same Kliegl assistance is available to you. The experience of more than half a century can be applied to your lighting whether the job is small or large. Our broad knowledge and skill in optics and reflector design can provide a solution for any lighting application. You gain important savings in time and money *plus* long-term satisfaction. There is no obligation—call on your Kliegl representative or write us direct today.

Our lighting advisors will be pleased to assist in the planning of any installation, using standard or special units to meet your requirements. Full details on request.

lighting

KLIEGL BROS.

ORIGINATORS AND MANUFACTURERS OF KLIEGLIGHTS

321 W. 50th ST., NEW YORK 19, N. Y.

Telephone: Area Code 212, COlumbus 5-0130

2-211

ESTIMATING FORUM—XXIII

[FROM PAGE 121]

estimating Forum—XXII (pg. 90, August, 1962, *Electrical Construction and Maintenance*).

While there are no multipliers in the table for a \$600,000 contract price, those for a \$625,000 project are close enough to serve our purpose. The spread between multipliers for the \$315,000 and the \$625,000 projects is not great. That between the \$600,000 and \$625,000 jobs is much less.

Cost Factors

Now, using the relevant multipliers in Fig. 1 for the \$625,000 project, we get the following results:

1. *Base Job Cost.* 0.80 (Col. 9) × \$600,000 = \$480,000.

2. *Base Cost of Material.* 0.480 (Col. 10) × \$600,000 = \$288,000. Since the project MLR is 60/40, this figure can be easily checked by taking 60% of the base cost (\$480,000) determined above.

3. *Base Cost of Labor.* 0.320 (Col. 11) × \$600,000 = \$192,000. If the base job cost has been calculated, this labor figure can be checked in two ways: (1) take 40% of the base job cost; (2) subtract the base material cost from the base job cost.

4. *Man-Hours of Labor.* 0.080 (Col. 12) × \$600,000 = 48,000 hours. The total labor hours can also be figured by dividing the base labor cost by the \$4.00 per hour rate. But that means that the base labor cost will have to be determined first.

Asset of Multipliers

The advantage of using the Fig. 1 multipliers is that any one of the base cost factors (job, material, labor) or total man-hours can be quickly determined when only the project contract price is known. It can save considerable time.

Thus far, this analysis answers the questions regarding division of a project's base cost. In addition, the contractor must know over what period of time this cost will be distributed; also what the average and maximum manpower (crew size) requirements will be. These subjects will be covered in the next article.



With Allen-Bradley Pressure and Temperature Controls

YOU'LL BE DOLLARS AHEAD ON MAINTENANCE COSTS

INDUSTRIAL GENERAL PURPOSE



BULLETIN 836 STYLE A
Pressure Switch



BULLETIN 837 STYLE A
Temperature
Switch with Capil-
lary Tube and Bulb



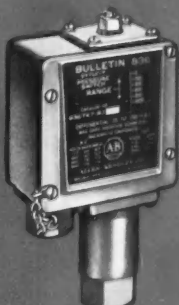
BULLETIN 836 AND BULLETIN 837 STYLE A. At the heart of these temperature and pressure controls is the precision snap-action switch that assures positive operation. As a result, vibration cannot cause arcing or faulty operation. Both the range and differential are adjustable.

Pressure Ranges: 30" vacuum (Hg) to 900 psi
Temperature Ranges: -100°F to 570°F

INDUSTRIAL OILTIGHT



BULLETIN 836 STYLE T Oiltight Pres-
sure Switch, Bellows Type



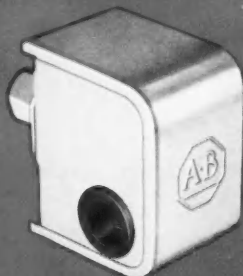
BULLETIN 836 STYLE T Oiltight Pres-
sure Switch, Piston Type



BULLETIN 836 STYLE T. These rugged pressure switches are especially designed for machine tool hydraulic systems. The enclosure is sealed against oil and water. The snap-action switch is unaffected by vibration, and the contact block has isolated N.O. and N.C. contacts. Both the range and differential are adjustable.

Pressure Ranges: 30" vacuum (Hg) to 5000 psi

PUMP AND COMPRESSOR



NEW BULLETIN 830C2 Pressure
Switch providing Higher Horse-
power Rating



BULLETIN 830A2 Pressure Switch



BULLETIN 830 PRESSURE switches are compact controls for air compressor and water pump service. Rugged in construction, yet economical in price. Contacts are enclosed, but are easily operated with a screwdriver for testing pump operation. A heavy zinc chromate finish eliminates rust problems. The pressure ranges are from 15 to 200 psi.

HORSEPOWER RATING

	Single Phase		Polyphase			D.C.	
	110v	220v	110v	220v	440-550v	32v	115-230v
830A2	1	1	1	1	...	1/4	1/4
830C2	2	3	3	5	5	1/2	1

28-09-2C

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

ALLEN-BRADLEY

Member of NEMA

QUALITY
MOTOR CONTROL



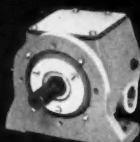
Here Are Some Practical Answers to Special Problems with Standard A-B Controls



BULLETIN 350
Reversing
Drum Switch



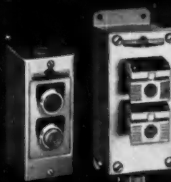
BULLETIN 803
Rotating Cam
Limit Switch



BULLETIN 808
Zero Speed
Switch

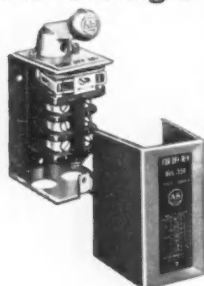


BULLETIN 840
Automatic
Float Switch



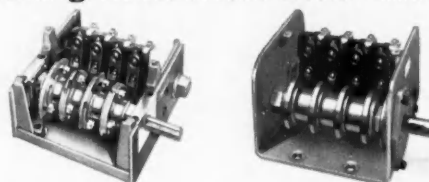
BULLETIN 800
Heavy Duty
Push Buttons

Bulletin 350 Reversing Drum Switches

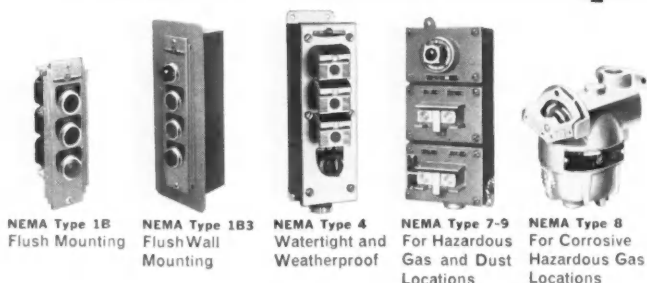


These compact, attractive manual switches are for starting and reversing AC and DC motors. The wrap-around cover and front terminals reduce installation time. You can easily set the switch for momentary or maintained contact operation. Also made for oiltight cavity mounting on machine tools.

Bulletin 803 Rotating Cam Limit Switches



A line of heavy duty pilot controls for rotating machines to initiate functions at any point of rotation. Made with up to 12 individually adjustable, independent circuits.



NEMA Type 1B
Flush Mounting

NEMA Type 1B3
Flush Wall
Mounting

NEMA Type 4
Watertight and
Weatherproof

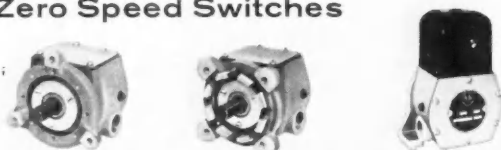
NEMA Type 7-9
For Hazardous
Gas and Dust
Locations

NEMA Type 8
For Corrosive
Hazardous Gas
Locations

Bulletin 800 Heavy Duty Control Stations

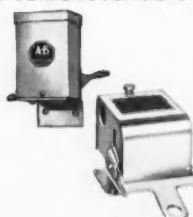
This unusually versatile line of heavy duty control units and stations will satisfy a wide range of needs. There are push buttons with flush, extended, and mushroom heads. Selector switches have knob, wing lever, cylinder, and coin slot operators. There are also pilot lights and potentiometer units. In addition, there is a complete line of general and special purpose enclosures as shown at the left.

Bulletin 808 Zero Speed Switches



These switches are used for plugging and anti-plugging of squirrel cage motors. Can be furnished in 3 types of mountings: base, 3 point flange, and 4 point flange. Also can be supplied with lockout relay to prevent accidental starting.

Bulletin 840 Automatic Float Switches



Here's a full line of rugged switches for automatic control of motors operating tank or sump pumps. All switches have a snap-action that assures positive operation, no matter how slowly the liquid level changes. A wide variety of operating accessories is available.

Allen-Bradley Co., 1316 S. Second Street, Milwaukee 4, Wis. • In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

25-07-20

ALLEN-BRADLEY

Member of NEMA

**QUALITY
MOTOR CONTROL**

Reader's Quiz

QUESTIONS from readers on problems of industrial equipment, installations, maintenance and repair. Answered by electrical maintenance engineers and industrial electrical contractors out of their experience. For every question and every answer published we pay \$5.00.

Fire Stops For Vertical Busway

QUESTION K41—*In an electrical installation using vertical busway, is there any code ruling on providing fire stops on the exterior or the interior of the busway? On the exterior when going through a floor, is concrete sufficient or must we use a noncombustible floor material?—V.S.*

ANSWER TO K41—Section 300-21 of the National Electrical Code states that all electrical installations shall be made in such a manner as to reduce to a minimum the spreading of fire through fire-stopped partitions, hollow spaces, fire walls or fire partitions, vertical shafts, ventilating or air conditioning ducts and between buildings.

In our power busway and wireway installations, we provide a firestop between floors, fire walls and between buildings.

We do not use concrete for these fire stops because concrete absorbs water and could in time short out our power busway. We use a non-combustible epoxy having high dielectric and bond characteristics.

Due to a large number of epoxy encapsulated motors in operation, quite a few bonding resin manufacturers offer suitable material for providing a good fire stop in busways and wireways. However, your local inspection authority should be consulted as to the accepted procedure in your area.—H.E.H.

ANSWER TO K41—About the only rule in the NEC that would apply to your question is Section 300-21, which states that electrical installations shall be made to minimize the possible spread of fire through fire-stopped partitions, etc. However, this code rule is quite general in nature and not too helpful in your particular case. With the advent of vertical busway risers in high-rise buildings, building and electrical inspectors have been concerned with the possibility of fire spread through these risers as well as any openings around the outside of a metal busway where it passes through floors and ceilings. Unless

such openings are closed, an up-draft is created, which has a chimney effect in the event of a fire.

Because of this problem, several large cities have adopted standards that would apply in your case. More recently, the Chicago Electrical Inspection Bureau has announced approval of two alternate methods for providing a suitable fire cut-off: "(1) Openings shall be filled with approved noncombustible material. Approved noncombustible material is a material which will not ignite when heated to a temperature of 1200°F, or (2) Openings shall be closed off by close fitting metal caps at the ceiling and floor lines. Suitable cut-offs against vertical travel of fire shall be installed within ventilated and unventilated vertical busways. Internal vertical busway fire stops shall be so located that vertical travel of fire from one story to another is effectively prevented." As a recommendation, I would suggest that you use metal caps to cover any openings around the outside of the busway where it passes through floors and ceilings. Inside the busway the fire stops should be high-temperature, high-dielectric material.—H.S.

3-Phase Loads on Single-Phase Supply

QUESTION L41—*We need a 3-phase 115-volt supply (about 0.1-amp load) for testing at places that have only a single-phase supply. Could someone supply me with the necessary information for constructing such a converter?—H.G.R.*

ANSWER TO L41—The best solution to your problem would be to buy a reliable unit, properly engineered and factory made; the time and effort saved will justify the cost. These converters are available as shown in an ad on page 163, *ELC&M*, June 1962, Add-A-Phase, Dept. ECM-6, Div. System Analyzer Corp., Nokomis, Ill.—J.A.

ANSWER TO L41—A 3-phase 115-volt power supply can be built up

using electronic components; however, for most electrical 3-phase measurements it would not be suitable. The harmonic content of such a device would be excessive.

You can purchase an "Add-A-Phase Unit" which converts single-phase power to 3-phase power.

You can also contact a fractional-horsepower motor manufacturer and have them build up a small synchronous-drive motor-generator set.—H.E.H.

Cadmium Rod Tests

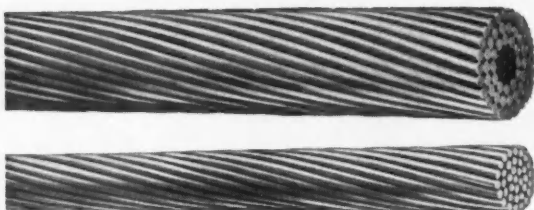
QUESTION M41—*Many years ago I spent my spare time in an auto battery repair and charging station. At that time the battery often gave out in six months or so because of wooden separators and shedding. It was common to tear them down and rebuild them.*

To test the condition of plates they used a cadmium rod dipped into the electrolyte and took a voltage reading from it to both plates.

I cannot remember what the voltage should be and cannot find a mention anywhere in text books. Others I have asked do not know the answer.—H.D.B.

ANSWER TO M41—In the cadmium rod test by using a high resistance accurate voltmeter we got a negative cadmium discharge of about 0.2 volt. On charge negative 0.13 volt. On positive charge 2.4 volts. And on positive discharge 1.95 volts. These figures are approximate and are described in the 1941 Standard Handbook For Electrical Engineers. The new rods have to be immersed in electrolyte for several days and then for five or ten minutes before using if allowed to dry.—H.S.

ANSWER TO M41—When a cadmium rod is placed across the top of the plates in a cell and properly insulated from them, there will be a difference of potential between the positive plates and the cadmium and between the negative plates and the cadmium. The difference between these two readings is equal



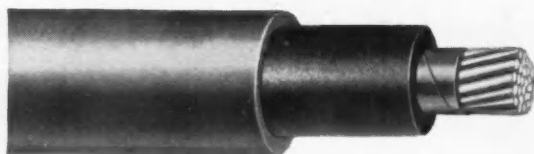
Bare Solid and Stranded Conductors—Aluminum, copper or ACSR in complete range of sizes, tempers, and constructions.



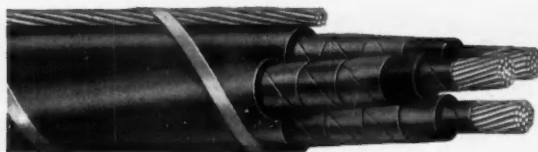
Weatherproof Line Wire—Aluminum, copper or ACSR conductors. Polyethylene and neoprene coverings available.

REYNOLDS

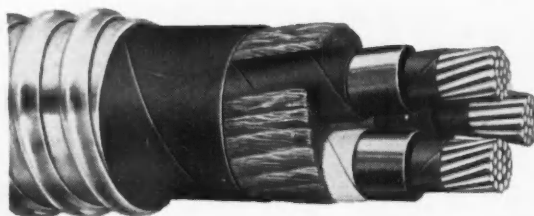
Complete range of types and



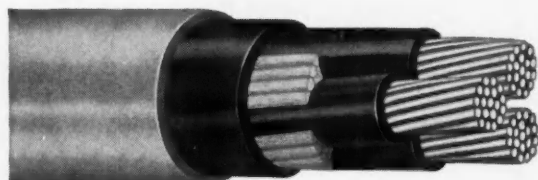
Rubber Insulated Neoprene Jacketed (Non-Shielded) Cable—For conduit, trays, troughs, underground duct, aerial, and direct burial. Aluminum or copper conductors. Up to 5,000 volts.



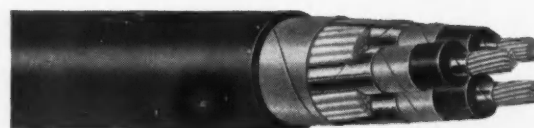
Pre-Assembled Self-Supporting Aerial Cable—Aluminum or copper conductors. Rubber insulated shielded or non-shielded, neoprene jacket. Regular or reverse lay construction. 0-15,000 volts. Various messenger choices.



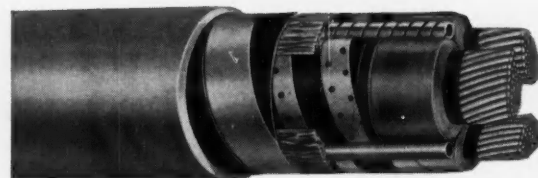
Interlocked Armored Cable—Single or multiple constructions of copper or aluminum conductors. Various insulations and types of armor available.



Varnished Cambric Cables—Aluminum or copper conductors. Up to 28,000 volts. Braided or lead sheathed.



Rubber Insulated Neoprene Jacketed (Shielded) Cable—Single or multi-conductor constructions. Copper or aluminum conductors. Ozone resistant butyl insulation. Temperature rating 85° C. 5,000 to 15,000 volts.



Low Pressure Gas-Filled, Paper Insulated, Lead Covered Cables—Aluminum or copper conductors. Self-supervising system. 0-46,000 volts. Tellurium lead sheath with or without outer protective coverings.



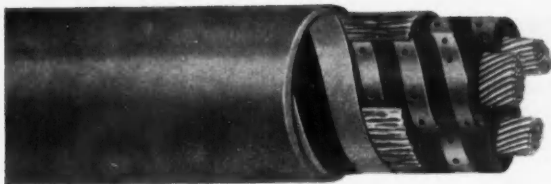
Self-Supporting Service Drop and Secondary Cable—Aluminum or copper conductors insulated with polyethylene or neoprene. Choice of messengers.



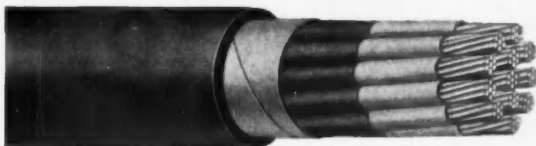
Underground Service Entrance Cable—Single or multi-conductor constructions. Aluminum or copper conductors. For wet or dry locations. Type USE, Style RR, 75° C.

POWER CABLE

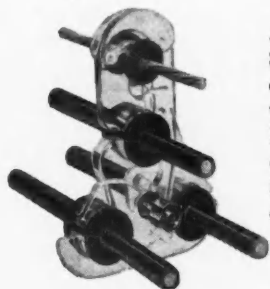
sizes to meet your specifications



Solid Type, Paper Insulated, Lead Covered Cables—Single or multiple conductors of aluminum or copper. Tellurium lead or copper bearing lead sheaths with or without outer protective coverings. 0-69,000 volts. Manufactured in accordance with latest AEIC specifications or to meet customer requirements.



Control Cables 600 Volts—Available in a complete range of types and sizes to meet your specifications.



Aerial Cables and Spacers—Aluminum or copper conductors, with various coverings. Highly engineered, molded plastic spacers. For 5,000 through 15,000 volt circuits.

Now—Reynolds can offer one of the most complete packages in the industry! Choose from a wide range of insulated wire and cable; bare overhead transmission cable; bus bar; substations and towers; aluminum conduit; condenser tubes; building products. In addition, these special services are available to Reynolds customers: engineering assistance and on-the-job consultation; design and fabrication assistance; research and laboratory facilities for product development. And, you can always count on fast delivery of your electrical product needs. Contact your Reynolds Distributor, Reynolds Sales Office, or write *Reynolds Metals Company, P.O. Box 2346-ET, Richmond 18, Virginia.*

For details send for brochure, "Reynolds Electrical Products." See address above.

All Reynolds wire and cable meet or exceed the requirements of standard industry specifications



**REYNOLDS
ELECTRICAL
WIRE and CABLE**

Watch Reynolds exciting TV program on NBC: The Dick Powell Reynolds Aluminum Show Tuesday nights. SPECIAL: See the 1963 cars on the color telecast of The National Automobile Show direct from Detroit on Sunday, October 21, NBC-TV, 6:00 to 7:00 p.m., EDT.



TREAT 'EM ROUGH!

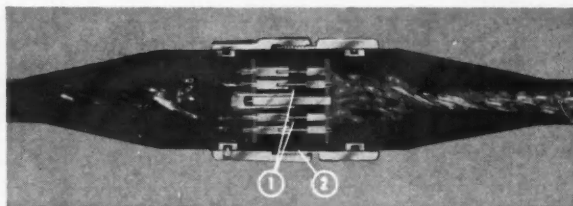
... but count on complete reliability 'from Joy electrical connectors

Many connectors handle "garden variety" jobs, but none can take rough, tough daily abuse like Joy. They're deliberately designed to stand up under the most severe conditions, electrically and mechanically.

Molded-to-cable in resilient Neoprene, Joy connectors harmlessly absorb shock, vibration, impact, distortion . . . and remain performance perfect. In undersea applications, they remain watertight. In oil wells, they withstand pressures at 20,000 psi. They carry voltages over 7500.

In short, Joy connectors save you money through longer life, less downtime, fewer repairs,

Watertight feature is standard with Joy
Cross-section shows 26-pole engaged connector. Note (1) contact "cork" seals on every conductor, and (2) integrally molded "O" ring face seal.



CD1116.3

WRITE TODAY for BULLETIN B78

JOY

Electrical Products
Division

ROOM 456 HENRY W. OLIVER BLDG.
PITTSBURGH 22, PENNSYLVANIA

to the voltage of the cell. In a normal cell there is a well-defined relation between these readings—both on charge and discharge—and any appreciable variation is an indication of irregular action of either the positive or negative plates, depending on which reading shows the variation. The positive cadmium reading will usually range from about 2.15 volts down to 1.95 volts during a discharge at the 8-hour rate, and from about 2.20 volts up to 2.50 volts during a charge. The range for the negative cadmium reading is from about 0.15 volt at the beginning of the discharge to about 0.30 volt at the end. During charge the negative range is from about 0.15 volt to —0.20 volt (0.20 volt reversed polarity) with new or nearly new plates. As the plates age, the reading at the end of charge diminishes to about zero volts. Use an accurate high-resistance voltmeter for this testing procedure. There are a number of other aspects to the problem which should be reviewed but are too lengthy to be discussed here. You can obtain all the details by referring to Volume 3 of "Audels Electric Library," McGraw-Hill's "Standard Handbook For Electrical Engineers," or requesting information from one of the major battery manufacturers.—D. J. G.

Use of Conductors In Underground Conduit Runs

QUESTION N41—In the design of underground power distribution systems, I have encountered contradicting opinions and would like to hear what some of the experts in this field have to say.

Most of the designers try to get a "dry" conduit system. They carefully arrange all conduit runs to slope and drain into the manholes; expensive watertight covers are specified; and manholes are waterproofed, etc., to prevent the entrance of water.

Other men say that is a waste of money. Water will sometimes enter ducts and manholes even if the preventative steps, mentioned above, are taken. They insist, that under average conditions, water in ducts and manholes will not harm good cables which are properly installed; the cooling effect of water is very beneficial and will prolong the life of the cable.—J.A.



Now there's an 8-foot Sylvania Caddy-Pack!

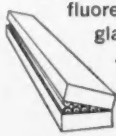
(Could group relamping be easier than this?)

Above you see another great moneysaving idea from Sylvania. An 8-foot Caddy-Pack that lets you roll 24 new Lifeline lamps into your lighting area safely, conveniently—and lets you roll out 24 replaced lamps in the same container!

It's a new version of the 4-foot Caddy-Pack, greatest efficiency unit ever designed for group relamping. Only difference... 4-footer stands up, 8-footer lies flat. And both contain sensational new Sylvania 9000-hour Lifeline fluorescents—each with an exclusive etch on glass for recording date of installation.



4-FOOT
CADDY-PACK



8-FOOT
CADDY-PACK

These are just two more examples of how Sylvania brings you lowest possible TCL — Total Cost of Lighting. With money-saving methods. Brighter, longer-lasting lamps. And an exclusive Sylvania money-

back guarantee that states: "If at any time a Sylvania Fluorescent Lamp fails in your opinion to provide better performance than any other brand fluorescent lamps, on the basis of uniformity of performance, uniformity of appearance, maintained brightness and life, it may be returned to the supplier for full refund of purchase price."

See your Sylvania representative for Caddy-Packs. Or write: Lighting Division, Sylvania Electric Products Inc., Dept. 15, 60 Boston St., Salem, Mass.

SYLVANIA

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS



*In the next 27 hours
you could lose
a customer to fire!*



PUT KIDDE FIRE DETECTION ON THE JOB!

Almost daily now, a major fire wipes out half a million in business or institutional assets—along with ability to buy.

Key to prevention of this staggering loss is use of fast, dependable alarm and protection equipment.

KEEP YOUR CUSTOMERS IN BUSINESS Protect them with Kidde FYRINDEX. They need it. And you make a good profit on every installation.

The Kidde FYRINDEX Detection System is built around the compact Detector unit shown above. Expandable, this modern system can protect a single booth or a whole complex of buildings. FYRINDEX responds quickly, operating on both fixed temperature and rate of rise principles. Can be heat tested repeatedly; is self-resetting; no parts to replace. Paintable. Dust, humidity, corrosive air particles can't impair its efficiency. Its long-lived reliability makes it especially popular with servicing personnel.

EASY TO INSTALL Components include FYRINDEX Spot Detector (each rated to cover 2500 sq. ft.), control box, distinct horn, and wiring. Mounts on standard 3½" box. Knockouts for surface and concealed wiring.

GET ALL THE FACTS Write or telephone us at 201-472-5000.



Kidde Ultrasonic & Detection Alarms Division

Walter Kidde & Company, Inc., 985 Brighton Road, Clifton, N.J.

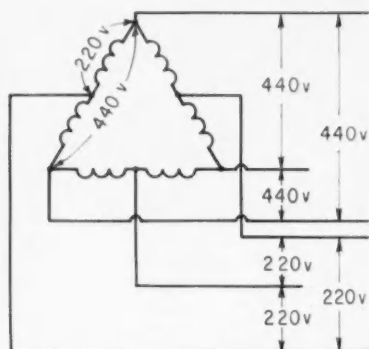
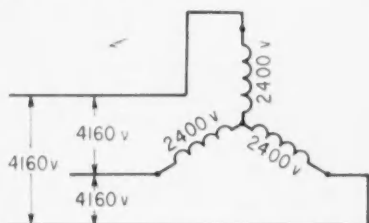
ANSWER TO N41—You have touched on a topic that will always reveal differences of opinions among engineers, contractors and others interested in underground conduit installations. The reasons for these varied opinions are that many different earth conditions exist in various parts of the country. And too, much depends on whether the conduit is metallic or nonmetallic and how it is installed; soil conditions; and whether the water contains acid or alkali. Let's face it. It is extremely difficult to exclude water permanently from underground conduits. In my opinion, an important factor is to select the proper conduit system and conductors that will best satisfy the field conditions under which they will be used. What is good for one area could be poor for another. Experience in a certain area soon reveals the logical selection of underground wiring materials and installation techniques in that locality. And it is common knowledge that nature's variables plague conduit and cable manufacturers.

As posed in your question, if both the "dry" and "wet" underground installations have proved successful in your area, then you have no problem. Use either method, applying the law of economics in conjunction with sound engineering practices. But with the latter it should be realized that many phases of engineering simply cannot be stereotyped for all parts of the country, and this philosophy applies to underground installations because of the many variables involved.

While water would have a cooling effect, it could also deteriorate certain insulations or sheaths if the water contains acid or alkali. For my own part, I prefer to make the underground conduit system as watertight as possible, giving careful attention to the slope of runs so as to allow drainage of water and condensation. If water can enter the conduit system too readily so will muddy earth sediment, some of which can be harmful to the cable insulations. In extremely wet soil conditions it is best to use high-quality insulated conductors (such as neoprene-jacketed Type USE) in the conduits. Under more favorable conditions standard moisture-resistant, rubber- or thermoplastic-insulated conductors will do the job satisfactorily. At potentials over 600 volts, consult an application engineer of a cable manufacturer.—J. L. C.

Can You Answer These QUESTIONS?

QUESTION V41—Below is a diagram of three 100-kva 2400 to 220-440-volt transformers to provide 220 volts and 440-volt 3-phase power for a shop. The primary is wye connected for 4160 volts and the secondary is delta connected for 440-volt, 3-phase. The 220-volt 3-phase is taken from the center taps on the transformers.



The 3-phase 220-volt load will be approximately 150 kva and the 440-volt 3-phase will be used for checking motors up to 200 hp.

What kva load can be taken from the 220-volt 3-phase buses without damaging the transformers, assuming no load is taken from the 440-volt buses?

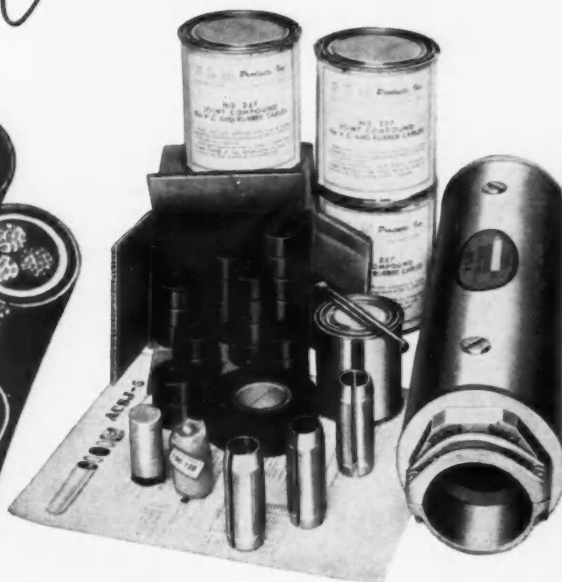
Also, I would like to see a vector diagram of the current and voltage with a load taken from both busses.
—G.A.W.

QUESTION W41—As a rule, which is preferred for switching 60-cycle ac circuits—a switch mechanism for quick-make, quick-break; slow-make, slow-break; or slow-make, quick-break? I hear a lot of differences of opinion on this subject.—R.S.

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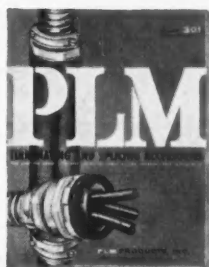
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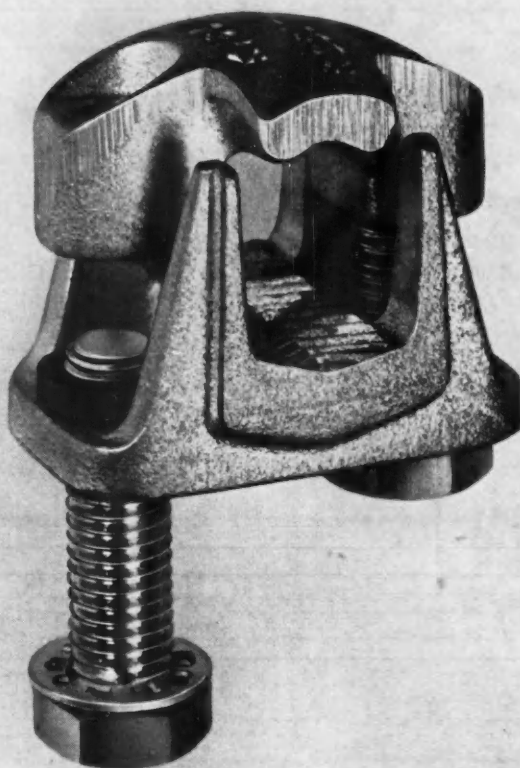
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Code Forum

Answered by:

J. C. HEWITT, Chief Electrical Inspector, Department of Labor and Industries, State of Washington, Olympia, Wash.

R. L. LLOYD, Electrical Safety Engineer, National Bureau of Standards, Washington, D. C.

B. Z. SEGALL, Consulting Electrical Engineer, New Orleans, La.

R. E. WARD, Chief Electrical Inspector, Insurance Department, State of Tennessee, Nashville, Tenn.

READERS are invited to submit questions regarding the National Electrical Code and its practical application to this Department. Questions are answered by the consulting editor whose initials appear at the end of each item. The views and opinions expressed are, in each instance, those of the individual consultant replying and are not necessarily those of his employers, of this publication or of a Code-making committee or panel on which he may serve in an official capacity.

Class III Installations

Q. Is a raintight enclosure suitable for a service-entrance switch in Class III areas?—R.M.B.

A. It should be noted that Underwriters' Laboratories, Inc. in its "Hazardous Location Equipment List" does not specifically list materials for Class III locations. It does, however, make the following general statement relative to Class III equipment:

"Equipment listed for Class II, Group G hazardous locations is also suitable for use in Class III Locations, except fan-cooled type motors when there is a very large amount of lint or combustible flyings which are liable to choke or clog the air passages of the motor."

The manufacturers of this hazardous location equipment, however, do show in their catalogs various fittings, etc., which they say are listed (by UL) for Class III locations. Furthermore they show that these items are also raintight; for example, the Type "GUB" junction boxes as manufactured by Appleton, Crouse Hinds, etc. However, these same manufacturers make a line of junction boxes, which are "raintight" but are not approved for Class III locations, viz., the "RS" series. This will be true for many other types of fittings, equipment, etc., manufactured by these specialists in the field of hazardous location devices.—B.Z.S.

Panelboard Ratings

Q. Under Section 384-15 the number of overcurrent devices of a lighting and appliance branch-circuit panelboard is limited to 42. No mention is made of the rating for such panelboard.

What would be the maximum rating of a switch or circuit breaker placed ahead of or made as a part of such panelboard?—J.M.W.

A. Generally speaking, inspection authorities follow recognized standards and check equipment to see whether or not such equipment is listed by a recognized testing agency or laboratory, such as Underwriters' Laboratories, Inc. The UL standard for panelboards does not specify a maximum rating for the mains of lighting and appliance panelboards. Such standard does require that the rating shall not be more than the current-carrying capacity of the main busbars or the capacity of the main switch or main circuit breaker if such is provided as part of the panelboard. There are minimum ratings that are permitted according to the total number of lighting and appliance branch circuits, and if busbars of greater capacity than the minimum required are used the rating of the panelboard may be similarly higher. Therefore, in answer to your question, the rating of the busbars in the equipment would determine the size main switch or main circuit breaker that should be used.—R.E.W.

Derating Branch Circuits

Q. In a store building, continuous-row fluorescent luminaires constitute the overhead lighting with the ballasts designed for connection to 120 volts. Each row of fixtures will be served by a 4-wire, 208Y/120-volt, 20-amp branch circuit consisting of 12/4 armored cable run from the panelboard to the first fixture of each row. The fixture load will not exceed 16 amps for each 20-amp circuit, which seems to satisfy the provisions of Paragraph 210-23 (b) since this code rule limits the branch-circuit load for store lighting to 80% of the branch-circuit rating. However, we have been told that the maximum load must be

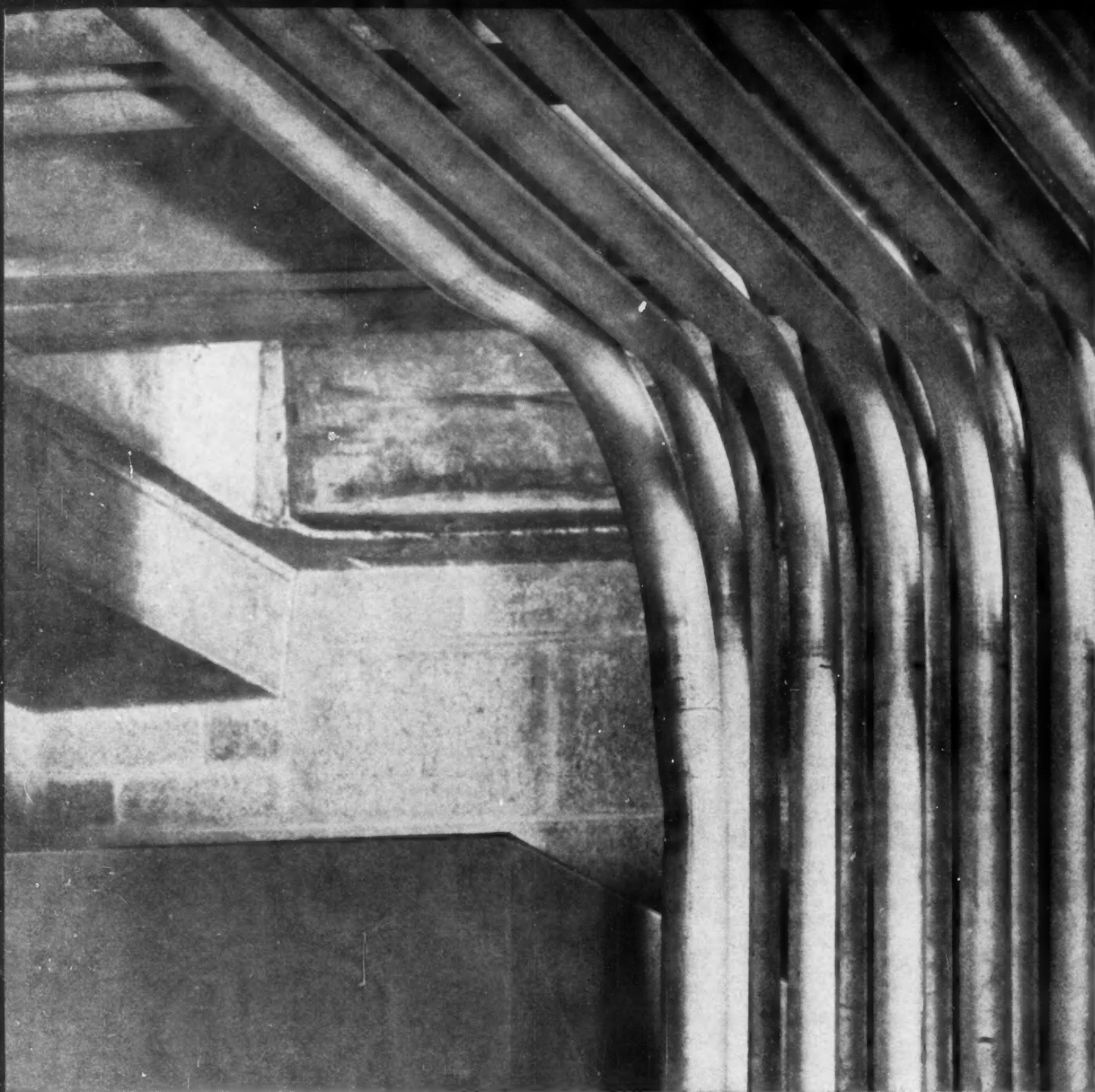
reduced to 12.8 amps per circuit because of an additional code rule that requires another derating to 80% of the wire carrying capacity because of four current-carrying wires in a single cable. We would appreciate your opinion.—C.D.B.

A. To put this discussion in the proper perspective, let us look at each factor separately.

First, the 80% maximum load called for in Paragraph 210-23 (b) is to reduce heating in panelboards. By applying a 20% derating, more overcurrent devices (carrying smaller loads) and larger (or more) panelboards would generally be required. This will allow a safer distribution of heat in the panel and minimize needless operation of some types of branch-circuit overcurrent devices or damage to feeder or circuit conductors in the panel.

On the other hand, the neutral conductor of the 4-wire wye branch circuits supplying the fluorescent fixtures will carry about the same load as the three ungrounded conductors because of third harmonic currents in this type of circuit arrangement. Accordingly, four such current-carrying wires in a single cable or conduit require a reduction in allowable current-carrying capacity to 80% of the conductor rating per Note 8 to Tables 310-12 through 310-15. In this case, the derating concerns the aggregate heat of four current-carrying conductors in a single cable. The 20% reduction in load reduces the temperature rise in the cable and affords greater protection for the conductor insulation.

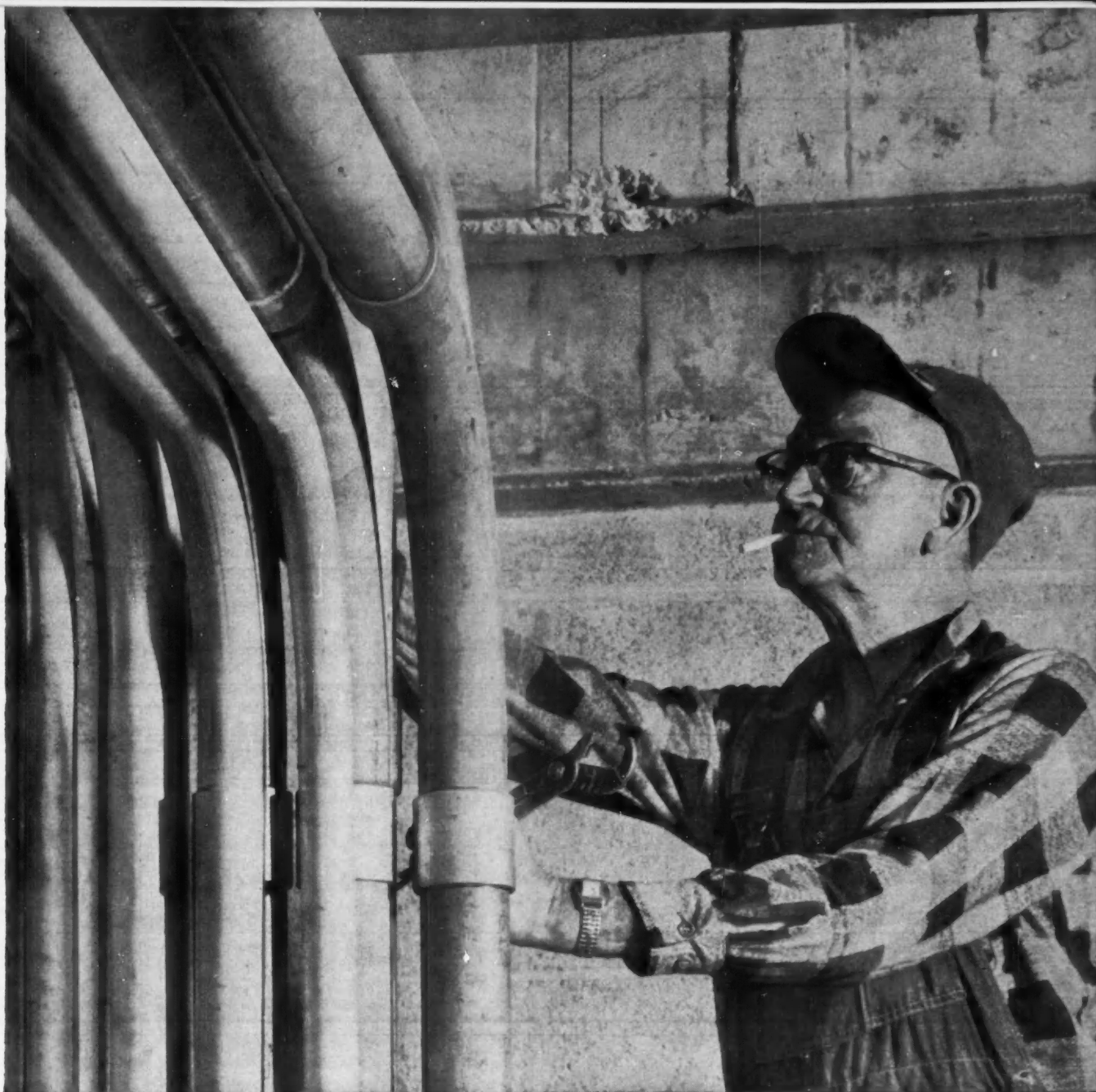
As a result, derating is necessary for two separate purposes. And in your case, applying the 80% factor only once will satisfy both objectives which ascribe to the same value. In other words, the maximum load on any of the 20-amp branch circuits cited in your question should not exceed 16 amps.—J.C.H.



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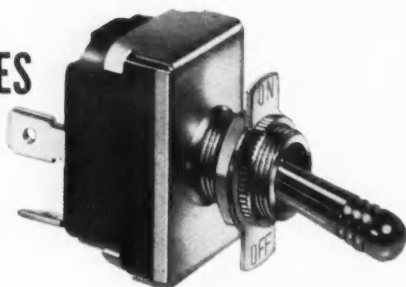
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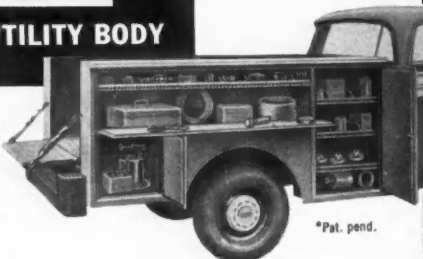


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Non-Metallic Sheathed Cable

Q. Does anyone manufacture an approved 100-amp non-metallic cable that can be used as a feeder?—G.C.

A. At the present time the code only permits up to a No. 4 AWG size. Such a cable with three copper conductors or less with even Type RHH insulation on the conductors would only be rated at 90 amps. See Table 310-12.

The 1962 Code, however, proposes to raise this to a No. 2. It will be noted that Table 310-12 will rate this cable with RH, RUH, RHW and THW insulated conductors of this size for 115 amps.

Incidentally, there has been a definite need for this larger cable. The installation of "all-electric" facilities in the many new apartment houses, motels, etc., throughout the country has necessitated the use of many make shift electrical installations because of the low-capacity rating of these non-metallic sheathed cables. It is hoped that even larger sizes may be permitted since many installations require, 125-, 150- and even 200-amp capacity for the individual apartments, etc.—B.Z.S.

Branch-Circuit Voltages for Pole Lighting

Q. We have an outside lighting installation where floodlights will be mounted on poles. The supply will be underground wiring with approved materials, and properly protected where such wiring emerges from the ground and extends up the poles to the floodlights. The underground cable will contain a grounding conductor that will be used to ground the metal housing of the pole-mounted mercury-vapor lighting fixtures. The voltage will be less than 500 volts.

Does the code limit the voltage that may be used on such an installation?—I.P.

A. Official Interpretation No. 459 to the NEC reads as follows:

"Statement: A roadway lighting system serves the roads and driveways at a sewage treatment works. The wiring is underground in a trench and there is no question regarding its suitability. The branch-

circuit supply is 480 volts, 3-phase, ungrounded. It feeds fluorescent lamps operating at 265 volts. The lamps are mounted on standards, such as are commonly used for street lighting.

"Question: Is Section 2113 (210-6 of the 1959 edition) of the National Electrical Code applicable to this installation?

"Answer: No."

You will note from the above official interpretation that Section 210-6 is not applicable to this installation, which is practically the same question that you have asked.

In Article 730, "Outside Branch Circuits and Feeders," it will be noted that in several places mention is made of over 600 volts; therefore, by inference such would be allowed.

It is proposed in the 1962 edition of the code under Section 210-6 (a) that two exceptions be made, which, under certain conditions, will limit the voltage to 300 volts to ground. However, the two exceptions pertain to industrial establishments, for inside wiring such as office buildings, schools, stores, etc., and do not mention outdoor or outside floodlighting. Therefore, as recorded in O. I. No. 459, the section does not apply to a roadway lighting system serving the roads and driveways at a sewage treatment works. In my opinion, the installation described by you is not a code violation.—R.E.W.

Grounded Conductor for AC Systems

Q. According to information I have received, the 1962 Edition of the Code will require a grounded conductor run to each individual service. Does this mean all installations shall have the grounded conductor run to each building that has a service?—J.F.M.

A. You have reference to Paragraph 250-23 (b) of the 1962 Code which states: "Where the secondary system is grounded at any point, the grounded conductor shall be run to each individual service. This conductor shall be not smaller than the required grounding conductor specified in Table 250-94 (a)." (This requirement becomes effective January 1, 1964.) You will note the requirement is mandatory where the secondary system is grounded at any point. In many areas this practice has been carried out for some time, and in some locations it is almost impossible to get



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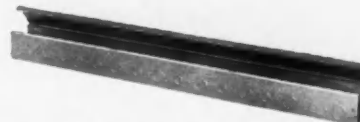
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effective grounding for equipment without a grounding conductor such as this rule will require. One statement made concerning this subject: If you are going to ground it at all, you have to ground it all the way. You have to go one way or the other. You can't go half way on it.

The purpose of the effective date was to give utilities an adequate amount of time to change their engineering practices where such practices are not in line with the requirement.—R.E.W.

Rewiring Conduits

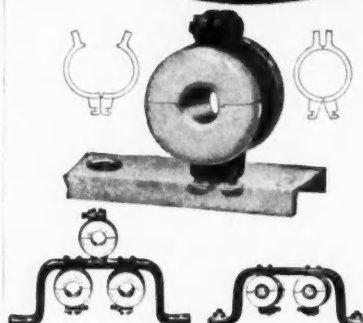
Q. We have a job to rewire existing conduits encased in a concrete slab of an industrial plant. It is our understanding that it is approved to rewire these conduits with TW conductors to a maximum fill of 50% where three or more conductors will be installed in each conduit. However, it appears to me that the allowable 50% fills apply only to concealed conduits after reading Table 3, Chapter 10. While the greatest length of each conduit run is concealed in the floor slab, all conduit runs do emerge exposed for a short distance at the panel-board and at columns or machines throughout the plant. The exposed part of the conduit runs at either end does not extend more than 5 ft above the floor. Because small portions of each conduit run are exposed as described, does this rule out using the 50% fill?—P.K.

A. Your analysis of increased fill being applicable to concealed raceways is correct. For the convenience of our readers, the statement concerning rewiring of existing conduits in Table 3, Chapter 9 reads as follows: "For rewiring existing raceways for increased load where it is impracticable to increase the size of the raceways due to structural conditions (the maximum conductor fill recommended is),—60% (one conductor), 40% (two conductors); and 50% (three or more conductors)." Official Interpretation No. 286 concerning the wording of this statement advised that it was applicable to concealed raceways only. Therefore, this confirms your understanding of the statement, in general.

However, it is my personal opinion that the short exposed "stubs" in the principally concealed conduit runs would not disqualify the use of the existing conduits for the increased conductor fill previously

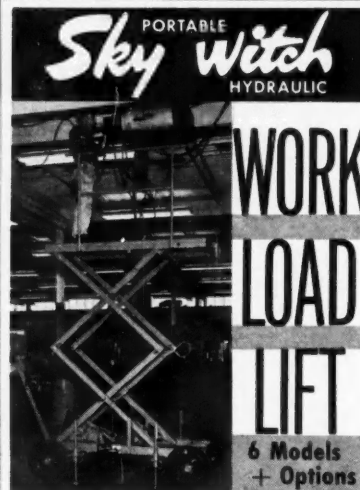
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described. It would appear that no useful purpose would be served if the short "stubs" were increased to a larger conduit size and then coupled to a smaller conduit in the concealed space.

In our inspection territory we would approve the 50% rewiring fill for the conduits described in your question, but you should seek the approval of your local inspection authority because they will have the final say in your area.—J.C.H.

Surge-Protective Capacitors in Hazardous Locations

Q. Reference is made to Paragraph 502-3 of the NEC, which states that surge-protective capacitors are required in Class II, Div. 1 and 2, Hazardous Areas. The building under consideration falls in this category under Group E; however, the service equipment is located in a heater room which is separated by 4-in. walls and has no openings into the hazardous area. Under these conditions is it necessary to install surge-protective capacitors?

The code further states that "surge-protective capacitors should be of a type especially designed for the duty," etc. Manufacturers' catalogs available in this office contain only capacitors recommended for motor power-factor improvement. Does this type of capacitor meet code requirements for surge-protective capacitor as stated above?—F.S.P.

A. Your question or questions raised are ones like many others in the code where I received a difference of opinion from engineers, as well as in reference books. However, in the first paragraph of your letter there was general agreement that if metallic raceways or conductors entered the hazardous area from the service equipment a wall would not be a governing factor in the installation. One insurance rating engineer stated that without more specific information he could not make a statement regarding the thickness of walls regardless of whether raceways or conductors entered the area. The purpose of lightning protection on electrical systems is to prevent surges of high voltages to travel along the lines and into electrical equipment whether it be located outdoors or inside buildings. Therefore, the



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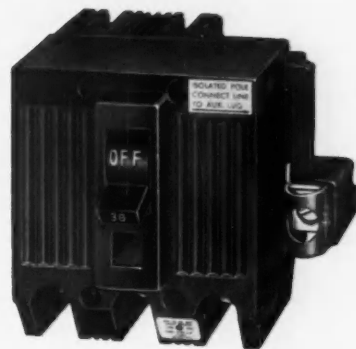
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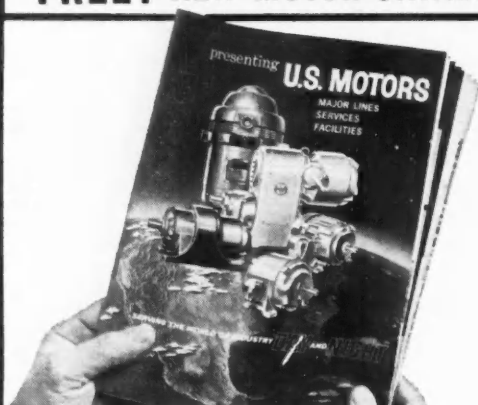


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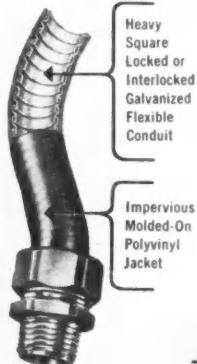
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answer to your first question would have to be resolved by the inspection authority in your area, because of the many variables involved.

In answer to the last question with reference to the type of capacitor, my information is this type capacitor is not the type required as it is stated surge-protective capacitors should be especially designed for this type of duty. In the Abbott and Sietka Handbook under Section 502-3 the following statement is made: "Complete information on methods of providing surge protection may be obtained from the Mill Mutual Fire Prevention Bureau, 400 W. Madison Street, Chicago, Ill."

As stated before, there are differences of opinion concerning this subject, so I would suggest that the insurance carrier involved be contacted on any installation requiring surge protection.—R.E.W.

Fuses for Motor-Running Protection

Q. We have two industrial plants in my area that are using fusible equipment for motor-running protection, as well as branch-circuit protection. Both of these plants are using line starters less the overload relays; in essence they are only contactors. They are using dual-element fuses in the disconnect part of the combination line starter for both short-circuit protection and running protection for the motor. The questions that develop are these:

(1) Is this practice a violation of the code?

(2) If not, is the practice a sound one; and if not sound what are the reasons?

(3) Are there horsepower limitations for motors which would permit the use of dual-element fuses for both types of protection as outlined above?

(4) A bulletin issued by a fuse manufacturer states that such a practice can be safely carried out, providing the application is a normal one and the starter is not operated frequently. How often is "frequently?"—E.T.S.

A. In answer to Question No. 1, the practice is not a violation of the code, and reference is made to Sections 430-54 and 430-56.

In answer to Question No. 2, existing conditions and the installation itself would determine the answer to this question. Therefore,

a definite statement cannot be made with reference to the general use of such equipment.

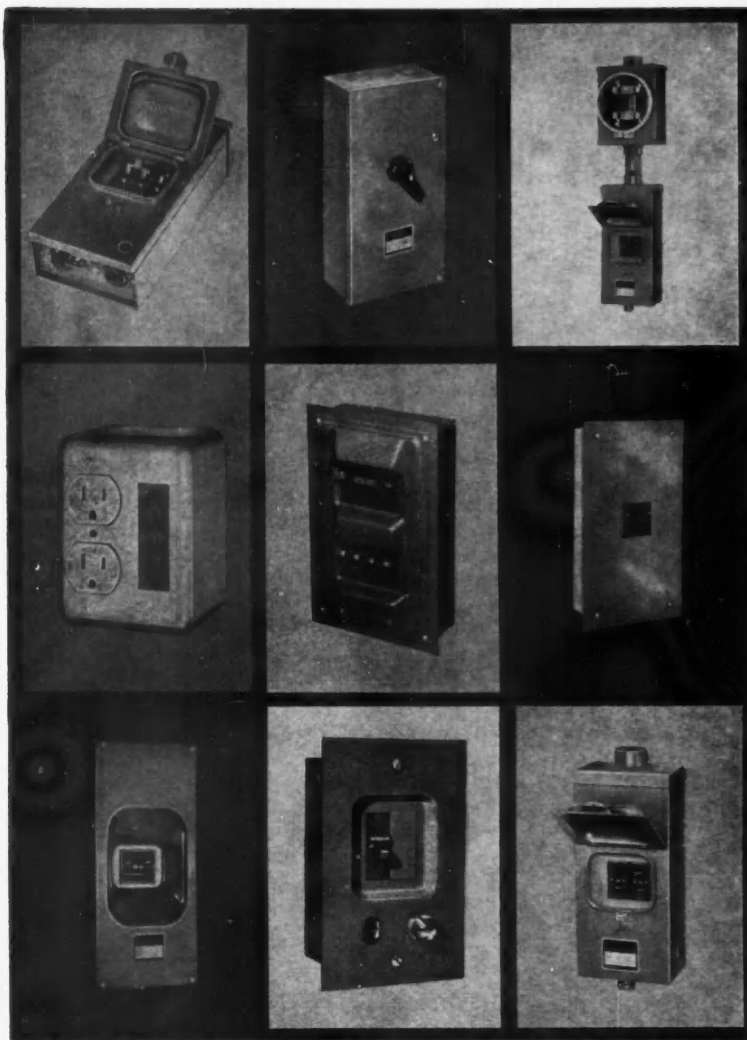
In answer to Question No. 3, there are limitations for which this type installation may be used, and I would certainly recommend that such limitations be followed. Most fusible switches are marked to indicate the maximum size time-delay fuses for given hp ratings.

Your fourth question concerns a statement made by a fuse manufacturer regarding the use of the word "frequently." My answer is that the *specific* case be referred to the engineering department of the fuse manufacturer who published the booklet for their interpretation as to whether or not they would recommend the equipment to do the job satisfactorily under the given conditions. A *general* statement along this line would not be practical as it would only be a matter of personal opinion.

I fully realize that I have not given you direct answers to some of the questions raised. One reason is that many industrial plants have had experience with such equipment, and their engineers have found that what they are doing, regardless of technical rules, is in their best interest. In such cases where installations meet safety requirements, both from the shock and fire standpoint, and their record is good with the use of the equipment regardless of what is used, it is to this plant's advantage. On the other hand, another plant with a different operation may have an experience record opposite to the first one mentioned.—R.E.W.

Accessibility of Disconnect Switches

Q. We have been questioned on the location of disconnect switches on some equipment in our plant. The code states disconnect switches must be accessible. Our equipment is fed through a 1000-amp busway located some 10 or 12 ft above the floor. Fusible disconnects are attached to the busway. Another disconnect is located between the busway and the equipment. The second disconnect is usually a combination starter device mounted or supported on flat irons attached to a stanchion. In order that clear walking space may be maintained under such an installation, switches are located approximately 90 in. from the floor. This means that small ladders or



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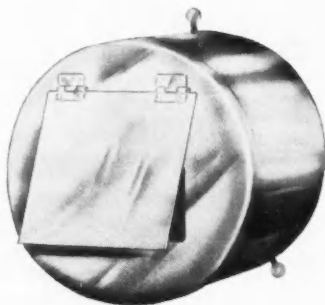
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stools must be used for a person to manually open the disconnect switch.

Does this location meet code requirements of being accessible?—G.R.N.

A. In Chapter 1 of the code the definition for accessible as applied to equipment is as follows: "Admitting close approach because not guarded by locked doors, elevation or other effective means. (See 'Readily Accessible.')" Under "Readily Accessible" a note of explanation in the Abbott and Stetka National Electrical Code Handbook states: "The term readily accessible implies a need for performing promptly an indicated act, for example, to reach quickly a disconnecting switch or circuit-breaker without the use of ladders, chairs, etc. The installation of such a switch or circuit-breaker at a height above 7 ft from a standing level is not considered 'readily accessible.'"

The National Fire Protection Association at its 66th annual meeting held in Philadelphia, Pa., May 21-25, 1962, accepted and approved the report of the committee on "Machine Tool Electric Standards." This standard is NFPA No. 79. Under Chapter 120, Supply Circuit Disconnecting Means, of the standard the following requirements are recorded under Section 120-17, Operating Handle:

"(a) The operating handle of the disconnecting means shall be readily accessible.

"(b) The center of the grip of the operating handle of the disconnecting means, when in its highest position, shall not be more than 6½ ft above the floor and it is recommended that it be at least 3 ft above the floor.

"(c) The operating handle shall be so arranged that it may be locked in the 'off' position.

"(d) When the control enclosure door is closed, the operating handle shall positively indicate whether the disconnecting means is in the open or closed position."

Some inspection authorities will consider and accept an extension from a switch handle that may be reached from the floor level as a means of disconnect for certain equipment. As an example, a short piece of rope attached to the switch handle on certain switches in your case could be used to disconnect the current supply from the device or machine. This would be a case of special permission, and not per NFPA No. 79.—R.E.W.

SELECTING MOTOR CONTROL SYSTEMS

[FROM PAGE 111]

ters as far as he was concerned, and he was quick to point out the reasons why he favored this particular system.

Nevertheless, just up the road, at the second plant, the plant electrical people want nothing to do with control centers. They prefer combination starters, and they are equally quick to detail all of the reasons why combination starters are the very best for their particular problems.


Here we see influential people who probably have not analyzed their own feelings as to why they select a specific electrical system. They "just know."

We might mention here that this problem of personal prejudice is not limited to any one group of people. We know a number of consulting engineers who are specifying control centers and really do not know why. Perhaps it is easier for them to work on some of their drawings where they can simply draw in a box and label it "control center."

Our study took many months of effort and was directed toward analyzing every single detail of a specific job to gain a general impression of the initial cost, including material and labor, of comparable electrical systems. While we caution ourselves that this data cannot be lifted up completely and applied arbitrarily to any and all installations, our findings certainly do give us a general impression on the cost relationships which exist between control centers versus combination starters versus plain starters.

Perhaps even more important, however, we were reminded once again that the purchase of an electrical control system, like the purchase of anything else, is dependent on many factors of which cost is just one. Any one of the ten influencing factors listed above might well be the determining factor for a particular job. And each job merits a careful analysis.

Our hope is that all those associated with the selection of a motor control system will approach the problem objectively, with an open mind, so that the final selection will truly be best.



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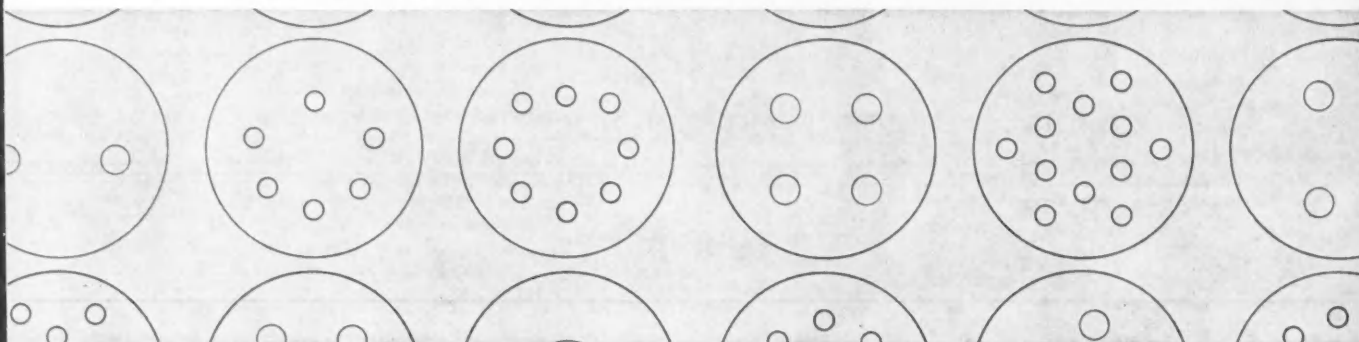
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PYLE-NATIONAL

NALMCO Sets Sights On Market Development

The National Association of Lighting Maintenance Contractors (NALMCO) held its 1962 convention at the Edgewater Beach Hotel, Chicago, August 6-8. Focal point and general conference theme was the technique of promoting the need for lighting maintenance in the industrial and commercial fields and methods of channeling this tremendous market potential into definitive programmed maintenance, preferably the contract type.

Starting with a handful of men about eight years ago, NALMCO now has 125 members in 38 states and Canada (and even one in London, England). By coordinating the experience, technical know-how, and operating efficiency of its members, it has gone far in establishing standard procedures for effective programmed lighting maintenance.

President Eugene St. Jean, St. Jean Lighting Maintenance, West Springfield, Mass., reported definite association progress in service to members, growth and national recognition; noted that NALMCO members addressed IES and EEI meetings and were invited to contact utility personnel through a display booth at the 1962 EEI Sales Conference in Chicago. Herbert Mendelsohn, Sun Ray Lighting Corp., Kansas City, Mo., suggested that NALMCO develop a promo-

tional film that could be used at such meetings and by member contractors in their own localities. Malger Gray, Fluorescent Service Corp., Tampa, Fla., noted that NALMCO is considering development of a study course for training of lighting maintenance contractor personnel.

National Accounts

Much of NALMCO's national recognition has come through its personal contact with headquarters executives of national merchandising chains (department stores, supermarkets, drug chains, oil companies, etc.). Since this program was initiated some two years ago, a large number of national firms have become interested in NALMCO services reported Melvin Galbraith, Approved Lighting Service, Cedar Rapids, Ia., chairman of NALMCO's National Accounts Committee. Many firms already have contracts with NALMCO members at the local level and others are considering it, delegates reported. Galbraith noted that one large chain recently issued an executive directive on group relamping in its stores, and the U.S. Postal Office department has developed a booklet outlining programmed lighting maintenance for its buildings.

Mr. Galbraith urged members to research their own operations to find less costly methods of maintaining lighting systems so they can show economic savings to highly cost-conscious prospects. With respect to national accounts, Galbraith revealed that NALMCO is: (1) attempting to learn home office policy on lighting maintenance and contract maintenance; (2) providing educational material to such firms; (3) urging them to adopt some standard type of lighting maintenance; (4) providing them with standard lighting maintenance specifications as a guide and basis on which their stores can call on local contractors for maintenance proposals.

Reports of a 3-year lamp life guarantee offered by some major lamp manufacturers caused considerable discussion at the sessions. NALMCO members view this with some concern since it upsets the 2-year relamping cycle and relevant maintenance contracts under which many of them are now operating. Chances are this will generate con-



FOUNDERS OF the National Association of Lighting Maintenance Contractors some eight years ago included these charter members at the recent NALMCO convention in Chicago: (L to R) Herbert Mendelsohn, Sun Ray Lighting Corp., Kansas City, Mo.; Edward I. Creed, C & S Lighting Maintenance Co., Cleveland, Ohio; and K. L. Purington, Lighting Sales & Service Co., Davenport, Iowa.

siderable study and research by those immediately affected.

Utility Cooperation

Should utilities be interested in NALMCO member services? Do the utilities have a stake in programmed lighting maintenance? NALMCO's answer is a definite "yes." In fact, NALMCO—through a printed folder distributed at the EEI Sales convention in Chicago—has alerted the utility industry to the fact that it is losing \$180 million annually in kwhr sales because 10% of the lamps (based on a national survey) in industrial and commercial buildings throughout the country are not operating because of burnout or defective components. The message is that these lamps would be burning, and using kwhrs, if those customers had programmed lighting maintenance and group relamping.

That utilities are interested and are cooperating was evidenced in a panel discussion. Members of the panel included: W. W. Kelly, Jr., Fluorescent Maintenance Service, Inc., Jackson, Miss.; Eugene St. Jean, St. Jean Lighting Maintenance, West Springfield, Mass.; Malger Gray, Fluorescent Service Corp., Tampa, Fla.; and Edward Creed, C & S Lighting Maintenance Co., Cleveland, Ohio. These contractors report highly successful utility cooperation; even do contract



THE FUTURE of contract lighting maintenance with national chains is subject of this NALMCO huddle at recent Chicago convention. Expressing views are (L to R): Melvin Galbraith, Approved Lighting Service, Cedar Rapids, Ia.; Fred Astor, Astor Electric Service, Inc., Miami Beach, Fla.; and Richard Pieper, Pieper Electric Co., Milwaukee, Wis.



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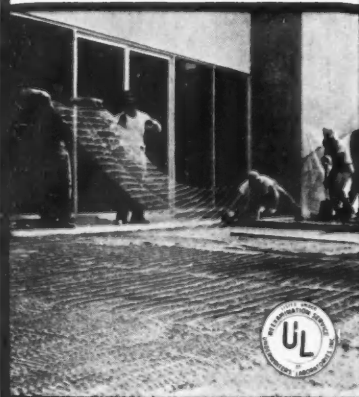
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NALMCO STUDY course chairman, Malger Gray, Fluorescent Service Corp., Tampa, Fla., tells members at recent Chicago convention that progress is being made on development of a study course for training lighting maintenance personnel.

maintenance for their local utilities.

Additional floor discussion revealed the following ways in which utilities help contractors: one sends a contractor promotional letter to 10,000 of its commercial and industrial customers; another turns over lamp outage reports to the contractor; several turn leads over to contractors; another recommends systematic maintenance with every lighting layout it makes. One NALMCO member reported closing 20 to 30 contracts on utility leads.

Cooperation like this doesn't come easy, warned Pat Bordelon, Salem Fluorescent Maintenance Service, New Orleans, La., chairman of NALMCO's Utility Committee. You've got to sell them on systematic lighting maintenance and show them how NALMCO member's services can add kwhr sales, he noted.

General consensus was that the best utility contacts were personnel of the lighting sales department.

Earlier this year, NALMCO established a Utility Member grade. Already two companies have become members. Reports indicate this list will grow.

Promotion and Sales

Market development through direct mail and personal sales was analyzed by experts in the respective fields.

Dick Lundgren, General Electric Co., Cleveland, Ohio, defined a direct mail piece as a "sales call in print"; noted that, if handled properly, it can be an effective door opener to a personal call. For those using or considering direct mail programs, Lundgren had these suggestions: survey and select your immediate market area; set an objective; carefully write and direct your copy to this group; remember that 85% of

a person's knowledge is gained through his eyes; emphasize what lighting maintenance can do for the prospect and highlight the services of your company. Develop a good mailing list (utility lists are excellent), he continued, and send material to a specific person in each firm—if possible. Be prompt in follow-up inquiries. Instead of measuring the success of a direct mail promotion in a percentage-return of inquiries, base it on the number of orders resulting from it, Lundgren concluded.

When making personal calls, use a light meter to show the prospect just how much lighting he is getting and leave a copy of the IES Bulletin of Recommended Lighting Levels with him, suggested Carl Zersen, managing director, Chicago Lighting Institute. Tell the prospect what he can gain from lighting maintenance and how you can help him. Create an awareness of better lighting to help you sell your services, Zersen advocated.

Every business should have a sales force with individuals concentrating on sales techniques and problems, stated R. L. Ringer, sales consultant, Los Angeles, Calif. Before a prospect can understand or appreciate a NALMCO member's service, he has to be sold on the idea and advantages of a lighting maintenance program. Being convinced that selling is basically a mental attitude, Ringer prefers the one-track mind that cannot be diverted from the prime goal of selling. With regard to lighting maintenance sales personnel, Mr. Ringer had these recommendations: try to get men who think in terms of duties and responsibilities and not just self-advancement; carefully train them in the basics of selling techniques for your specific field; anticipate sales resistance arguments on the part of prospects and give your men answers to counteract such points. Although he indicated preference for the commission type compensation, Ringer acknowledged that in today's security-conscious environment a salary or salary plus commission is necessary to attract sales personnel.

Technical Forums

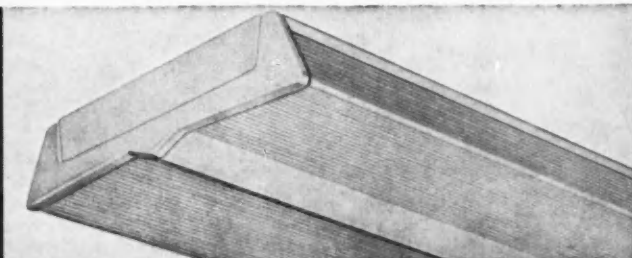
Immediately after adjournment of general sessions, delegates attended a series of concurrent forums on related technical problems. Among subjects discussed were: labor man-hours, outdoor floodlighting maintenance; estimating techniques, overhead, selling tools, bal-



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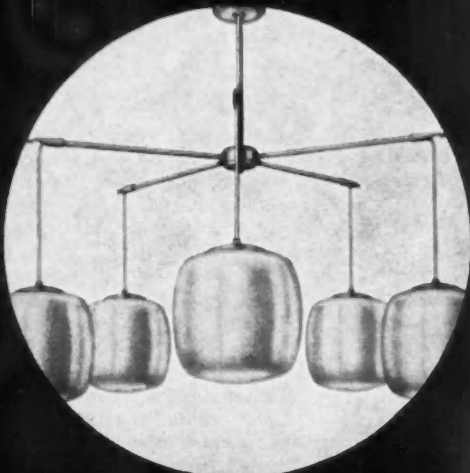
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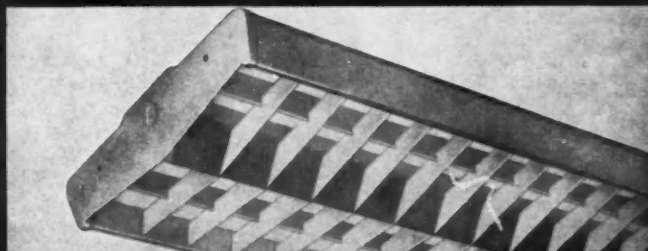
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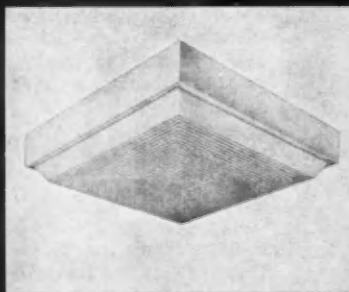
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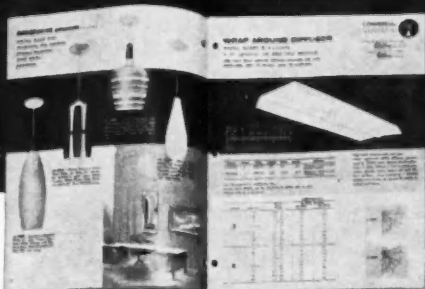
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GENERAL  ELECTRIC



17TH ANNUAL All-Industry Convention, sponsored by Carolinas Chapter, NECA, was held July 25-27 at Myrtle Beach, S. C. Attending were: J. O. Howard, Howard-Green Electric Co., Raleigh, N. C.; T. L. Watson, Jr., Watson Electrical Construction Co., Wilson, N. C.; R. K. Robinson, Robinson Electric Co., Charlotte, N. C.; and A. J. Bryant, F. E. Robinson Co., Inc., Charlotte, N. C.

last problems, washing techniques, lamp life and new products, and sales training.

Opinions and conclusions expressed at these sessions included the following:

The most practical labor unit division for lighting maintenance is 100 units to the hour. Multipliers should be applied to normal units to take into account job factors and manpower efficiency.

A successful lighting maintenance operation requires good labor relationships, adequate wage scale and proper briefing on each job.

Use of proper, safe equipment, mechanized aids, adequate tools, and well-stocked trucks boosts operating efficiency. Careful routing and crew shifting also help. Some contractors use a 90-day cycle for crew shifts.

Uniformed personnel is good company promotion.

There is room for improvement in detergents, particularly a non-foaming type for mechanical washers.

Figuring lighting maintenance on a per-lamp basis is hazardous. Fixture mounting and ballast age should be carefully checked.

Electrically heated buildings with ceiling insulation directly over concealed fixtures need careful checking because trapped heat can substantially reduce ballast life.

Moderating the various forum sessions were the following NALMCO members: W. C. Abrams, Eveready Electric Co., San Francisco, Calif.; Herbert Kohn, Gro-Ko Sales Co., St. Paul, Minn.; Eugene St. Jean, St. Jean Lighting Mainte-

nance, West Springfield, Mass.; Edward I. Creed, C & S Lighting Maintenance Co., Cleveland, Ohio; Robert E. Watson, Fluorescent Maintenance Co., Denver, Colo.; Leon Mendelsohn, Steel City Fluorescent Maintenance, Inc., Chicago, Ill., and Bert Osterman, Flood-Lite Service, Inc., Los Angeles, Calif.

Introduced at the conference were these three recently elected (by mail ballot) NALMCO regional vice presidents: Eastern Region—C. E. Hessler, The Eastern Sales & Engineering Co., Baltimore, Md.; Central Region—E. I. Creed, C & S Lighting Maintenance Co., Cleveland, Ohio; Midwest Region—R. E. Watson, Fluorescent Maintenance Co., Denver, Colo.

Chairman of the local arrangements convention committee was Jerome Gimbel, Sun-Ray Fluorescent Co., Chicago. Lin Best, Best Fluorescent Maintenance Co., Temple City, Calif., headed the convention program committee.

Council to Develop Electrical Standards

Representatives of major automobile manufacturers and two national trade associations met on July 26 in Detroit, Mich., to form the Industrial Electrical Equipment Council for the purpose of developing electrical standards for industrial equipment.

Present at the meeting were delegations from American Motors Corporation, Chrysler Corporation, Ford Motor Company, General Motors Corporation, National Ma-



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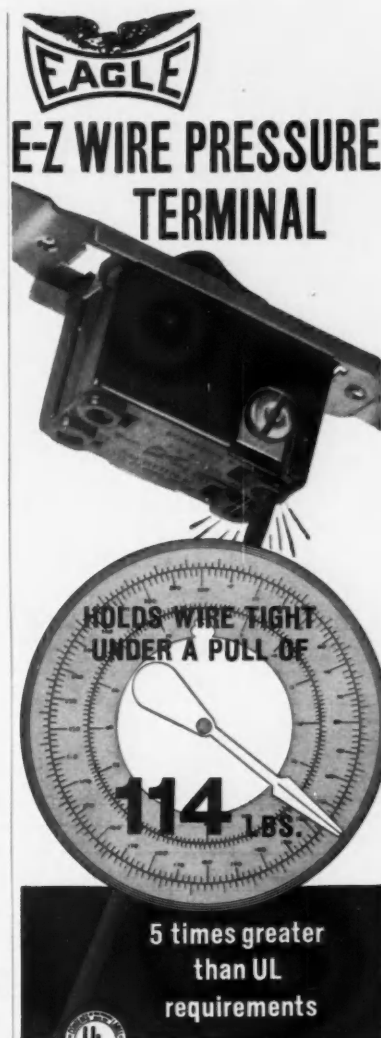
chine Tool Builders' Association and the National Electrical Manufacturers Association. The Council thus constitutes a joint committee of users and suppliers of equipment to which the newly developed and up-dated standards will apply.

The new Council supersedes the former Joint Industry Conference which has been largely inactive in recent years, although automobile manufacturers and other users have continued to utilize modifications of JIC standards in the absence of later data. One of the major tasks confronting the new group will be to reconcile and consolidate existing electrical standards for machine tools and other industrial equipment, to revise those which are out of date, and to prepare new standards where none exist.

The National Electrical Manufacturers Association was authorized to coordinate the joint activity; to provide the chairmanship of the Council's Executive Committee and to supply secretarial assistance. The newly developed standards, however, will not be known as NEMA standards, but will represent a combined effort of all interested parties. The ultimate objective will be to have all such standards processed as American Standards through the American Standards Association.

Although the new activity is directed initially at providing the automobile industry with an opportunity of clarifying and unifying its varying electrical requirements for machine tools and industrial equipment, the Council recognizes that its publications may apply to many other industries as well. For that reason it is contemplated that the presently organized Executive Committee will in the future include representatives from other industries as the need arises for broadening the base of present operations.

The Executive Committee will constitute the Council's policy making body. Under it will be a Technical Committee which will be charged with coordinating work of various sub-committees and in preparing general electrical standards for industrial equipment. At the outset the Council will limit its activities to electrical standards for machine tools, with two sub-committees presently being set up for that purpose—one dealing with machine tools for mass production purposes, and the other concerned with general purpose machine tools. Additional sub-committees will be



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formed later, including representation from those industries primarily concerned, such as manufacturers of welders, furnaces and other equipment.

L. D. Price, manager of the NEMA Engineering and Safety Regulations Department, was named temporary chairman of the Council, and R. W. Shaul, member of the same NEMA Department, was appointed Secretary.

EASA News

Established independent small businesses can go broke as easily as new ventures, EASA International President Ben J. Horton warned members recently. He is vice-president of The Atkinson Armature Works, Pittsburg, Kansas.

Referring to Dun & Bradstreet's report on business failures, Mr. Horton said: "There seem to be as many ways of going broke as there are of making a profit." Furthermore, the Kansas industrialist warned: "If we cannot show a profit that will allow shop improvements, then we are in a sense 'going broke.'"

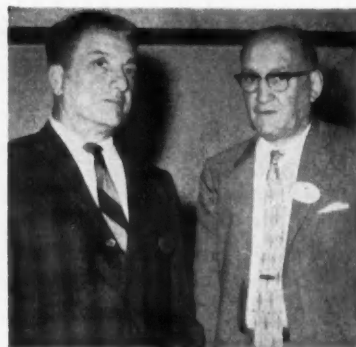
Old businesses are not always in sound conditions, Mr. Horton said. Some become only shells of their former selves, others suffer from complacency, and some acquire new management that does not always rise to new challenges.

Independent electrical service firms were advised by Mr. Horton to be alert to economic and market conditions that might cause them to wind up the year without a profit.

Another leading electrical apparatus service company manager, William R. Lugar, Kiemle Co., Toledo, Ohio urged association members to take fuller advantage of EASA memberships. "Since 1954 some one from our top management has attended each EASA convention," he stated recently. Sometimes as many as four or five attended.

"They have been able to bring back from each convention at least one idea which made the time and expense of attending worthwhile. There were ideas for short and long-range modernization of plant facilities; for reduction of handling costs; for a smoother flow of work to give faster service."

Bringing customers into one's shop is an effective means of sales promotion, Mr. Lugar has found. "Generally the customer is very surprised to learn that a motor re-



EASA PAST-PRESIDENTS Joseph H. Previty, Penn Electric Motor Co., Philadelphia, and Selden F. High, The Sullivan Electric Co., Cincinnati, in a post-session huddle at the 29th EASA Convention in Chicago.

pair shop can be large, efficient and clean," he asserted.

"Big D in '63" was the theme of a meeting of Dallas shop operators who convened with EASA officials and other members of the association's convention committee on August 11 at the Statler-Hilton in the Texas city to formulate plans for the 30th Annual Convention next June 9-12.

The annual conference of the Southeastern Chapter of EASA will be held October 25-27 in Jacksonville, Fla. Lester Belcher, Jacksonville Armature & Motor Works, and Joe Wright, Turner Electric Works, are co-chairmen. The organization will also meet in Raleigh, N. C., March 29-30, for the annual Technical Forum.

Members of EASA's chapters in the Pacific Northwest will convene in Seattle, Wash., on October 5-6 at Hotel New Washington Doric for the annual Pacific Northwest Conference. Earl Brooks, United Electric Motors, Seattle, is handling arrangements.

Three Puerto Rico electrical apparatus service firms and one from Jamaica have joined EASA's Southeastern Chapter, it has been announced by Roger Wilson, president. Nieves Electric Service, Ponce; Stateside Service, Santruce; and Atlantic Rewinders Co., San Juan, are the new members from the Commonwealth; while R. A. Silvero, Ltd., Kingston, is the member from the newest independent nation in the Western Hemisphere.

Members of Greater St. Louis Chapter of EASA heard International President Ben J. Horton

speak at a meeting in Edwardsville, Ill., at the Edwardsville Gun Club on July 26. The members also heard August A. Baechle, EASA executive vice-president, and Jack Langford, safety engineer, Monsanto Chemical Co. Arrangements were handled by Elbert Niebruegge, Hopcroft Electric & Machine Shop, Inc., Edwardsville.

Don Osenbaugh, who recently joined the Roy M. Butcher Electric Co., San Jose, Calif., after a successful career at the J. L. Hughes Co., Columbus, Ohio, has been named chairman of the West Coast Conference of EASA, to be held October 6 at Del Webb's Town House, San Francisco.

The Jones Electric Machinery Co., Topeka, Kansas, an EASA member firm, has been appointed a distributor for Allis-Chalmers motors and control equipment, according to E. A. Jones, owner of the 32-year-old firm.

Utility Transformer and Equipment Co., Baraboo, Wis., an associated firm of Chicago Electric Co., Chicago, Ill., recently announced the appointment of 18 new manufacturers' agents, according to Glenn F. Glave, president.

J. H. Martin, executive vice-president, and Paul K. Wolfram, sales manager of Inmanco, Inc., an EASA associate member firm, recently celebrated their 25th anniversaries with the company.

Approval of Denver, Colo., as the site for the 1965 EASA Convention, was made by the association's board of directors at their spring meeting. Other conventions are scheduled to be held in Dallas, in 1963, and in New York City in 1964.



CORRIDOR CONFAB at EASA Convention in Chicago finds Paul V. Bush, Lubbock Electric Co., Lubbock, Texas; and Joe M. Wright, Turner Electric Works, Jacksonville, Fla., discussing session agenda.

DATES AHEAD

American Home Lighting Fixtures Month—National promotion, September 1-30.

International Association of Electrical Inspectors—Chapter Meetings—**Eastern Section**, Mt. Washington Hotel, Breton Woods, N. H., September 10-12; **Western Section**, Morrison Hotel, Chicago, Ill., September 17-19; **Northwestern Section**, Tyee Motel, Olympia, Wash., September 24-25; **Southwestern Section**, Hobergs, Calif., October 1-3; **Southern Section**, Tutwiler Hotel, Birmingham, Ala., October 15-17; **Canadian Section**, Queen Elizabeth Hotel, Montreal, Can., November 1-2.

Associated Independent Electrical Contractors of America—Convention, Blackstone Hotel, Ft. Worth, Texas, September 14-15.

Canadian Electrical Mfrs. Assn.—Annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., October 3-5.

International Assn. of Electrical Leagues—27th annual conference, Sheraton-Chicago, Chicago, Ill., October 3-5.

National Electronics Conference—McCormick Place, Chicago, Ill., October 8-10.

National Electrical Contractors Assn.—Minneapolis Auditorium, Minneapolis, Minn., October 9-13.

Rocky Mountain Electrical League—Fall convention, The Broadmoor, Colorado Springs, Colo., October 14-18.

Materials Handling in Canada Exposition—Automotive Bldg., Exhibition Park, Toronto, Can., October 15-18.

Florida Association of Electrical Contractors—Annual conference (no trade show), Castaway's Motel, Daytona Beach, Fla., October 18-20.

Electrical Manufacturers Trade Show—Indiana State Fair Grounds, Indianapolis, Ind., October 23-25.

National Electrical Manufacturers Assn.—Annual meeting, Shoreham Hotel, Washington, D. C., week of November 12.

Electrical & Home Appliance Show—Balboa Park, San Diego, Calif., November 23-28.

Building Research Institute—Fall conference, Mayflower Hotel, Washington, D. C., November 27-29.

Electrical Engineering Exposition—Sponsored by AIEE, Coliseum, New York, N. Y., January 28-31, 1963.

16th International Heating & Air Conditioning Exposition—Coliseum, New York, N. Y., February 11-14.

Associated General Contractors of America—44th annual convention, Americana Hotel, New York, N. Y., March 4-7.

4th Southeastern Plant Engineering and Maintenance Exposition—Merchandise Mart, Charlotte, N. C., March 5-7.

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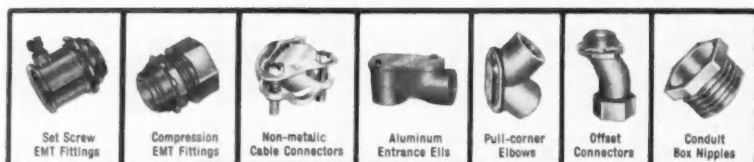


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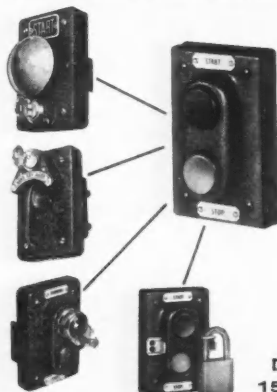
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Among the Manufacturers

Headquarters Announcements

Master Vibrator Co., Dayton, Ohio, has been renamed **Master Consolidated Inc.**

Sunbeam Lighting Co., Los Angeles, Calif., has acquired the **Interior Systems, Inc.**, Los Angeles. The new firm will be operated as a division of Sunbeam and will be known as Sunbeam Interior Systems.

Oak Mfg. Co., Crystal Lake, Ill., has announced the completion of the acquisition of **Hart Mfg. Co.**, Hartford, Conn., and the election of Robert T. McTigue as Hart president.

General Electric Co., Schenectady, N. Y.—Harold C. Robertson, manager of marketing, Ballast Dept., Danville, Ill.

Bunting Brass and Bronze Co., Toledo, Ohio—Joseph M. Williams, director of research and development.

Continental Copper & Steel Industries, Inc., New York, N. Y.—Walter H. Knorr, treasurer, has also been elected a vice president.

General Electric Co., Cleveland, Ohio—Ralph E. Crockett, manager of Commercial and Industrial Sales at Nela Park; Large Lamp Dept.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.—W. C. Sealey, manager of engineering—product systems, Transformer Dept.; L. C. Aicher, system engineer, Electrical Transmission and Distribution Div.; W. J. Klein, director of marketing services and public relations; Charles W. Parker, Jr., manager of marketing services; Alfred B. Leech, public relations manager—new Marketing Services and Public Relations Div.

General Electric Co., Waterford, N. Y.—Donald V. Brown, manager of electrical market development unit; Davidson Clark, manager of fluid market development unit; Silicone Products Dept.

Minnesota Mining & Mfg. Co., St. Paul, Minn.—Roy J. Gavin, divisional vice president, Irvington and MICO Divisions.

Westinghouse Electric Corp., Pittsburgh, Pa.—Thomas J. Murin, engineering manager, Motor and Gearing Div., Buffalo, N. Y.

Federal Pacific Electric Co., Newark, N. J.—Irvin A. Kleinman, marketing manager, electric heating products.

Anaconda Wire and Cable Co., Marion, Ind.—David A. McCarthy, manager of portable cable sales.
Stanley Works, New Britain, Conn.—Donald W. Davis, executive vice president.

Standard Kollsman Industries, Inc., Melrose Park, Ill.—Joseph P. Tumminaro, vice president of manufacturing.

Youngstown Sheet and Tube Co., Youngstown, Ohio—Harold Hoekelman, general manager of steel operation.

Electric Storage Battery Co., Philadelphia, Pa.—John R. Smyth, director of engineering, Exide Industrial Div.

Kellems Co., Stonington, Conn.—Robert W. Dixon, vice president and general manager.

Sylvania Electric Products Inc., Salem, Mass.—Rolf M. Moller, product manager for incandescent sales, Lighting Products Div.

Jomac Inc., Philadelphia, Pa.—Richard C. Hughes, Jr., sales manager, Protective Clothing Div.

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.—Robert J. Ruff, manager of advertising and sales promotion for temperature control segment.

Regional Appointments

NEW ENGLAND

Christopher York Lighting, Inc.: Jack Meany, Meaney, O'Connell, Millerick, Inc., Cambridge, Mass., manufacturer's representative covering Massachusetts, Connecticut, Vermont, Rhode Island, New Hampshire and Maine.

Jasper Blackburn Corp.: Arthur J. Cayon, Winthrop, Mass., manufacturer's representative covering Maine, New Hampshire, Vermont, Rhode Island and eastern Massachusetts.

General Electric Co.: Donald W. Marshall, sales representative of Silicone Products Dept. located at Boston, Mass.

Line Material Industries, McGraw-Edison Co.: Robert M. Hannan, lighting engineer covering New England region with headquarters in Revere, Mass.

MIDDLE ATLANTIC

Christopher York Lighting, Inc.: Nate Schwinger, Broomall, Pa., manufacturer's representative covering eastern Pennsylvania, Maryland, Delaware, Virginia, Washington, D. C., and Camden, N. J.

Jasper Blackburn Corp.: Donahue & Smith Co., Philadelphia, manufacturer's representative in

eastern Pennsylvania and southern New Jersey.

Safety Tower Ladder Div., Air Space Devices: Dunbar A. Eberts, representative covering New York and northern New Jersey.

General Electric Co.: Larry D. Stoddard, representative in new sales office, Buffalo, N. Y., Silicone Products Dept.

SOUTH ATLANTIC

Fanner Mfg. Co.: Charles R. Lee & Associates, Inc., Miami, sales representative for southern portion of Florida; Van & Smith Co., Inc., Tampa and Jacksonville, sales representative for central and northern Florida; Electrical Products Div.

Dayco Corp.: James Gregory, Jr., district manager with headquarters in Gastonia, N. C., Industrial Sales Dept., Rubber Products Div.

Safety Tower Ladder Div., Air Space Devices: Car-Mad Safety Equipment, Inc., Florida, representative.

General Electric Co.: Joseph B. Foley, manager, southern sales region, with headquarters in Atlanta, Ga.; Robert R. Dable, manager, Virginia sales district, with headquarters at Richmond; Large Lamp Dept.

Trade Service Publications, Inc.: Harold C. Horne, Charlotte, N. C., representative in the southeastern states.

EAST CENTRAL

Safety Tower Ladder Div., Air Space Devices: O. M. Bercaw & Associates of Illinois, representative; Cable-Hight Co. of Ohio, representative; Gardner Scott Corp. of Michigan, representative.

Dayco Corp.: Alan Larsen and Edward Collins, district managers headquartered in Chicago; Industrial Sales Dept., Rubber Products Div.

Pfaff & Kendall: Gene Goodman, representative in Memphis, Tenn.

Thomas & Betts Co.: Edward F. Kramer, district manager in Cleveland, Ohio.

General Electric Co.: Robert J. Schulte, manager of Chicago sales district; Large Lamp Dept.

Okonite Co.: P. B. Lavelle, district manager of new Indianapolis, Ind., office.

Kollsman Instrument Corp.: J. A. Jancar Co., Dearborn, sales representative for Michigan except upper Peninsula; Richardson-Allen Div.

Hyster Co.: William G. Holiday,

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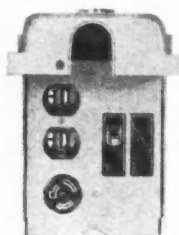
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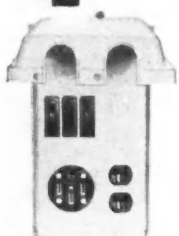
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manager of Danville, Ill., plant.

Youngstown Sheet and Tube Co.: James W. Kirkpatrick, man-
ager of Chicago district.

WEST-CENTRAL

Allis-Chalmers Mfg. Co.: Tiney's
Electric Co., Lincoln, Neb., agency
in portions of Nebraska and Kan-
sas.

General Electric Co.: Robert J.
Lee, manager of Mississippi Valley
sales district in St. Louis; Large
Lamp Dept.

Harvey Aluminum: Stein & Jen-
sen Sales Co., St. Paul, sales rep-
resentative covering Minnesota,
North and South Dakota and
northern Wisconsin.

Ilg Electric Ventilating Co.:
Robert D. Robinson, sales repre-
sentative in the western half of
Oklahoma with headquarters in
Oklahoma City sales office.

Dayco Corp.: Herbert Simpson,
district manager headquartered in
New Orleans; Industrial Sales
Dept., Rubber Products Div.

Frank Adam Electric Co.: Semco
Sales Co., Houston, sales rep-
resentative for southern half of
Texas.

WEST

General Electric Co.: Lysander
T. Ashlock, sales representative
with offices in Downey, Calif., Sil-
icone Products Dept.

Plymouth Rubber Co., Inc.: W. C.
Osborn, Phoenix, tape representa-
tive in Arizona; Strong & Humph-
rey, Denver, tape representative in
New Mexico, Colorado, Wyoming
and southern Montana.

Sola Electric Co.: Robert M.
Mayers, district sales engineer for
western sales district office in Los
Angeles.

I-T-E Circuit Breaker Co.: Fred
A. Thornton, district manager for
new sales office in Salt Lake City,
Utah.

Anaconda Wire and Cable Co.:
Norman A. Lorimer, manager of
sales, Orange, Calif., plant.

Christopher York Lighting, Inc.:
John Reynolds, Reyco Sales Agency,
Salt Lake City, manufacturer's
representative for Utah and Idaho.

**Safety Tower Ladder Div., Air
Space Devices:** Robert C. Brinkley,
representative covering Washing-
ton for production metals.

Okonite Co.: Thomas A. Kom-
mers, manager of Portland, Ore-
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Harvey Aluminum: Electrical
Agencies, Inc., Denver, sales rep-
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ROTATING EQUIPMENT

[From PAGE J20]

transformers can usually be located
in some remote location, the result
is a substantial savings in space
with respect to the motor generator.
Fig. 4 shows the usual
weights and dimensions for several
standard converter ratings. A
typical rotary converter installation
is shown in an accompanying
photo.

Having but one armature results
in a converter efficiency higher than
that of the motor-generator set
(usually from 3% to 5% higher)
as indicated on the graph.

Rotary converters are essentially
unity-power-factor machines. Vary-
ing the field excitation changes the
power factor, and to some extent,
the dc voltage. However, since op-
eration of the converter at power
factors less than 95% results in
excessive heating, the degree of dc
voltage control possible by field
control is limited to approximately
5%. While the rotary converter
can furnish some correction for
system lagging power factor, it
cannot at the same time carry full
rated dc load without excessive
heating.

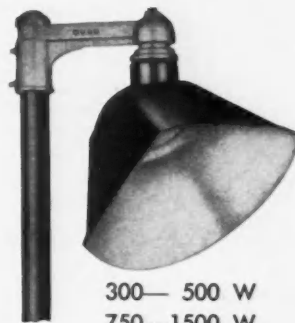
The nameplate duty cycle of ro-
tary converters for industrial duty
corresponds to those of the motor-
generator sets. Likewise, the mo-
mentary current-carrying ability
is limited by its commutating abil-
ity and its ability to stay in step
with the supply-voltage frequency.
In addition, the permissible tem-
perature rises and maximum am-
bient temperatures are identical
to those described for the motor
generator set.

Switchgear associated with the
operation of a rotary converter is
similar to that associated with the
synchronous motor-generator set.
Suitable protective devices such as
overspeed switch, reverse-polarity
dc voltage relay, and overcurrent
and undervoltage relays provide
adequate protection against faulty
operation.

Installation and maintenance re-
quirements of rotary converters
are similar to those of the motor-
generator set. Suitable means, such
as a chain hoist, should be provided
for handling of the armature in the
event it has to be removed from the
machine.



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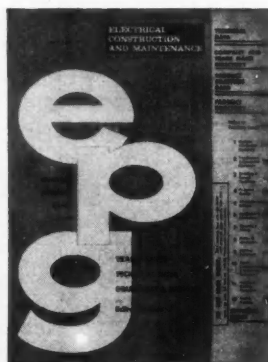
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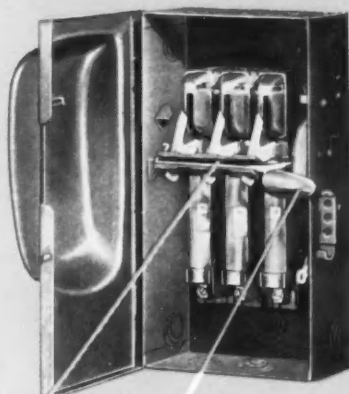
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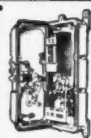
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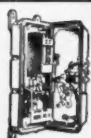
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Electrical Construction and Maintenance

with which is consolidated Electrical Contracting. The
Electriganst and Electrical Record . . . Established 1901

ELECTRICAL PRODUCTS GUIDE ISSUE

VOL. 61, NO. 9A

MID-SEPTEMBER, 1962

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ELECTRICAL CONSTRUCTION and MAINTENANCE

Published monthly with an additional issue in September by McGraw-Hill Publishing Company, Inc. James H. McGraw (1860-1948), Founder. Executive, Editorial, Circulation and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Printed in Albany, N. Y. Officers of the Publications Division: Nelson L. Bond, President; Shelton Fisher, Wallace F. Traudt, Senior Vice Presidents; John R. Callahan, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator; Daniel F. Crowley, Vice President and Controller. Officers of the Corporation: Donald C. McGraw, President; Hugh J. Kelly, Harry L. Waddell, Executive Vice Presidents; L. Keith Goodrich, Executive Vice President and Treasurer; John J. Cooke, Vice President and Secretary.
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United States subscription rate for individuals in the field of the publication \$3.00 per year, 75 cents each issue. Electrical Products Guide \$2.50. Canada \$5.00 a year. All other countries, \$25.00 a year, payable in advance. Second class postage paid at Albany, N. Y., and additional mailing offices. Printed in U.S.A. Title registered in U.S. Patent Office. © Copyrighted 1962 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.

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WIREMOLD® SURFACE METAL RACEWAYS

THE WIREMOLD COMPANY • DEPT. E2-9A, HARTFORD 10, CONNECTICUT

PLUGMOLD® Multi-Outlet Systems

Cover a wide range of electrical outlet requirements — for new construction or rewiring jobs. Mount on any surface . . . walls, work benches, counters, displays, etc. A minimum of fittings is required.

NO.1900



Furnished three ways: unwired (space outlets as desired); factory-wired sections (for short runs); and prewired Snapicoil (outlets on various centers).

NO.2000



One size raceway accepts five types of outlets — 2-and 3-wire duplex, grounding (A.S.A. Standard) 2-and 3-wire single-circuit, and 3-wire two-circuit.

NO.2100



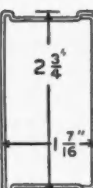
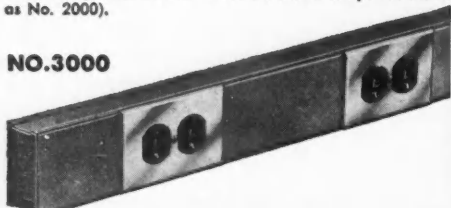
Furnished unwired (space outlets as desired). Receptacles available include 2-wire, 2- and 3-wire grounding, lumiline single, midjet twistlock, 3-wire polarized, 3-wire polarized grounding, and T-slot.

NO.2200



A combination multi-outlet system, wiring raceway and steel baseboard. Same receptacles as No. 2000. Furnished as pre-wired Snapicoil (same as No. 2000).

NO.3000



Any standard device designed for a single gang box can be installed wherever needed within the raceway. Standard flush plates are used.

CAPACITY (for wire types T, TW, RU)

PLUGMOLD		CONDUCTOR SIZE				
		NO. 6	NO. 8	NO. 10	NO. 12	NO. 14
NO. 1900	with devices	—	—	—	3	3
	no devices	—	—	—	3	3
NO. 2000	with devices	—	—	—	3	3
	no devices	—	—	—	3	3
NO. 2100	with devices: consult Wiremold Catalog No. 22	5	8	10	14	17
	no devices	5	8	10	10	10
NO. 2200	with devices	3	7	10	10	10
	no devices	5	8	10	10	10
NO. 3000	with devices	10	10	10	10	10
	no devices	14	16	20	42	56

WIREMOLD® Surface Wiring Raceways



Used along ceilings and walls — to modernize existing wiring, or complete new wiring from panel box to outlets. A minimum of fittings is needed. Four sizes; furnished as one-piece raceways.

NO.200



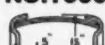
NO.500



NO.700



NO.1000



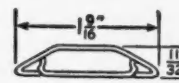
CAPACITY (for wire types T, TW, RU)

WIREMOLD	CONDUCTOR SIZE				
	NO. 6	NO. 8	NO. 10	NO. 12	NO. 14
NO. 200	—	—	—	3	3
NO. 500	—	2	3	4	5
NO. 700	—	3	5	6	8
NO. 1000	5	8	8	10	10

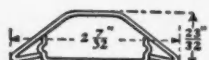
PANCAKE® Overfloor Duct Systems

Strong, flat overfloor raceways to carry power and light and communications wiring to locations away from walls. Quickly installed without channeling into floors. A minimum of fittings is needed.

NO. 1500



NO. 2600

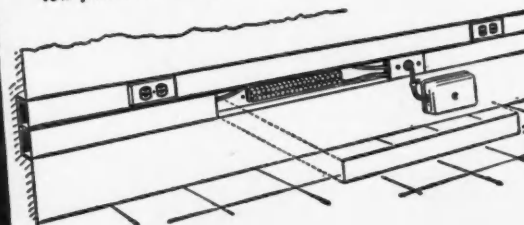


CAPACITY (for wire types T, TW, RU)

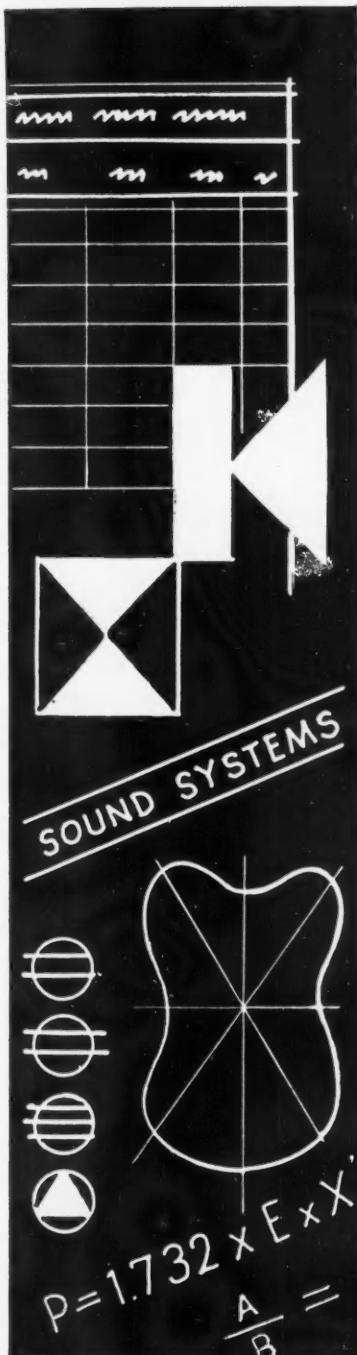
PANCAKE	CONDUCTOR SIZE				
	NO. 6	NO. 8	NO. 10	NO. 12	NO. 14
NO. 1500	—	4	4	6	8
NO. 2600	4	7	8	10	10

TELE-POWER Duct Systems

Consist of a pair of parallel Plugmold Raceways — one for telephone, signal and inter-office communications wiring; the other a multi-outlet system for power and light wiring. Because each raceway has a separate cover, the electrical contractor or telephone installer needs only install or remove the cover for the wiring that concerns him. The high and low potential wiring are not exposed to each other.



TECHNICAL DATA



GRAPHICAL SYMBOLS

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GRAPHICAL SYMBOLS FOR ARCHITECTURAL PLANS

Ceiling Wall

○	○	Outlet
⊖	⊖	Blanked Outlet
⊖	⊖	Drop Cord
⊖	⊖	Electric Outlet; for use only when circle used alone might be confused with columns, plumbing symbols, etc
⊖	⊖	Fan Outlet
⊖	⊖	Junction Box
⊖	⊖	Lamp Holder
⊖	⊖	Lamp Holder with Pull Switch
⊖ _{PS}	⊖ _{PS}	Pull Switch
⊖	⊖	Outlet for Vapor Discharge Lamp
⊖	⊖	Exit Light Outlet
⊖	⊖	Clock Outlet (Specify Voltage)

CONVENIENCE OUTLETS

⊖	Duplex Convenience Outlet
⊖ _{1,3}	Convenience Outlet other than Duplex 1=Single, 3=Triplex, etc
⊖ _{WP}	Weatherproof Convenience Outlet
⊖ _R	Range Outlet
⊖ _S	Switch and Convenience Outlet
⊖ _R	Radio and Convenience Outlet
⊖ _▲	Special Purpose Outlet (Des. in Spec.)
⊖	Floor Outlet

SWITCH OUTLETS

S	Single Pole Switch
S ₂	Double Pole Switch
S ₃	Three Way Switch
S ₄	Four Way Switch
S _D	Automatic Door Switch
S _E	Electroliner Switch
S _K	Key Operated Switch
S _P	Switch and Pilot Lamp
S _{CB}	Circuit Breaker
S _{WCB}	Weatherproof Circuit Breaker
S _{MC}	Momentary Contact Switch
S _{RC}	Remote Control Switch
S _{WP}	Weatherproof Switch
S _F	Fused Switch
S _{WF}	Weatherproof Fused Switch

SPECIAL OUTLETS

○ a,b,c,etc
⊖ a,b,c,etc
⊖ a,b,c,etc

Any standard symbol as given above with the addition of a lower case subscript letter may be used to designate some special variation of standard equipment of particular interest in a specific set of architectural plans.

When used they must be listed in the Key of Symbols on each drawing and if necessary further described in the specifications.

PANELS, CIRCUITS, AND MISCELLANEOUS

■	Lighting Panel
■	Power Panel
—	Branch Circuit; Concealed in Ceiling or Wall
---	Branch Circuit; Concealed in Floor
----	Branch Circuit; Exposed
→	Home Run to Panel Board. Indicate number of circuits by number of arrows. Note: Any circuit without further designation indicates a two-wire circuit. For a greater number of wires indicate as follows: --- (3 wires) ---- (4 wires), etc.
—	Feeders. Note: Use heavy lines and designate by number corresponding to listing in Feeder Schedule.
⊖	Underfloor Duct and Junction Box. Triple System. Note: For double or single systems eliminate one or two lines. This symbol is equally adaptable to auxiliary system layouts.

⊖	Generator
⊖	Motor
⊖	Instrument
⊖	Power Transformer (Or draw to scale.)
⊖	Controller
⊖	Isolating Switch

AUXILIARY SYSTEMS

⊖	Pushbutton
⊖	Buzzer
⊖	Bell
⊖	Annunciator
⊖	Outside Telephone
⊖	Interconnecting Telephone
⊖	Telephone Switchboard
⊖	Bell-Ringing Transformer
⊖	Electric Door Opener
⊖	Fire Alarm Bell
⊖	Fire Alarm Station
⊖	City Fire Alarm Station
⊖	Fire Alarm Central Station
⊖	Automatic Fire Alarm Device
⊖	Watchman's Station
⊖	Watchman's Central Station
⊖	Horn
⊖	Nurse's Signal Plug
⊖	Maid's Signal Plug
⊖	Radio Outlet
⊖	Signal Central Station
⊖	Interconnection Box
⊖	Battery

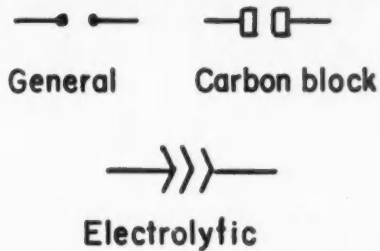
Auxiliary System Circuits

Note: Any line without further designation indicates a 2-wire system. For a greater number of wires designate with numerals in manner similar to --- 12-No. 18W-3/4" C., or designate by number corresponding to listing in Schedule.

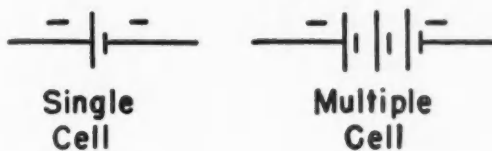
⊖ a,b,c Special Auxiliary Outlets.
Subscript letters refer to notes on plans or detailed description in specifications.

GRAPHICAL SYMBOLS FOR POWER AND CONTROL

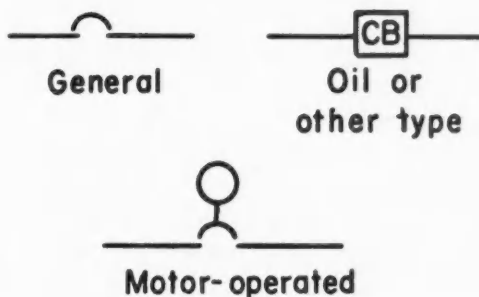
ARRESTERS



BATTERIES



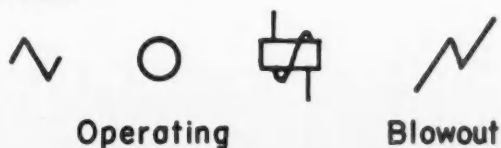
CIRCUIT BREAKERS



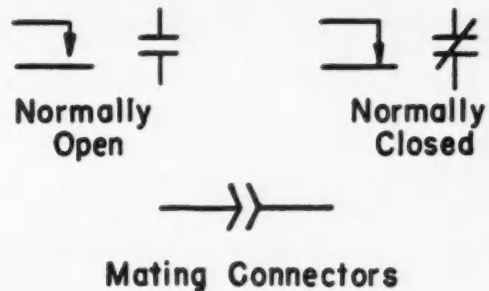
CAPACITORS



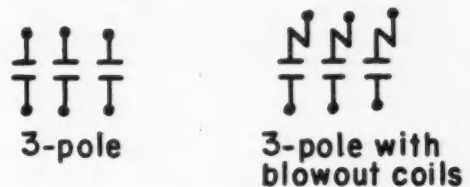
COILS



CONTACTS



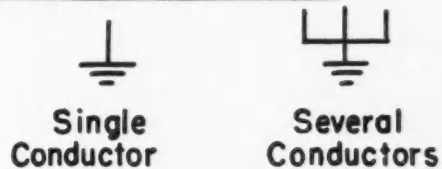
CONTACTORS



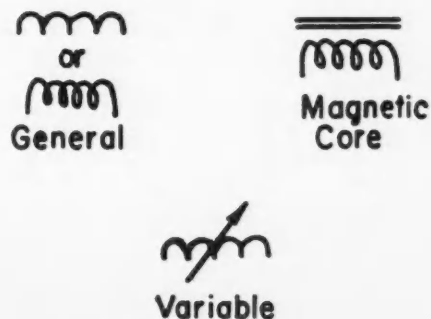
FUSES



GROUND CONNECTION



INDUCTORS



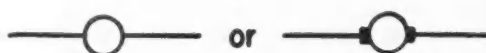
GRAPHICAL SYMBOLS FOR POWER AND CONTROL

(continued)

LAMPS

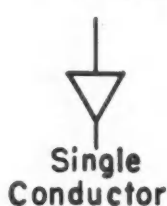


MACHINES, ROTATING



Motors, Generators, etc.

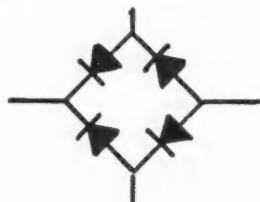
POTHEADS (Cable Terminators)



RECTIFIERS

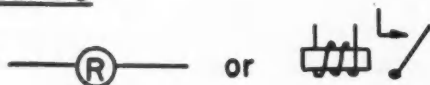


Half Wave

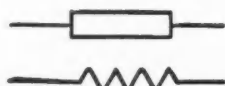


Full Wave (Bridge)

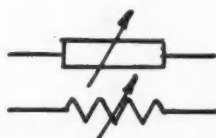
RELAYS



RESISTORS



Fixed

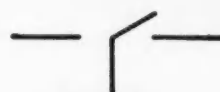


Variable

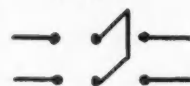
SWITCHES



Single Throw



Double Throw

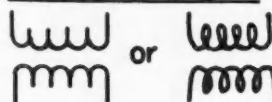


Knife



Pushbutton

TRANSFORMERS

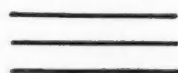


General



With Core

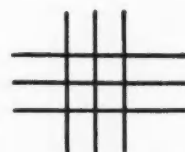
WIRING



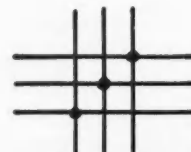
Conductors



Spliced Conductors



Crossing of conductors, not connected



Crossing of conductors, connected



Joining of conductors, not crossing



Grouping of conductors

CODE TABLES

Table 1. Maximum Number of Conductors in Conduit or Tubing

Types RF-2, RFH-2, R, RH, RW, RH-RW, RHW, RHH, RU, RUH, RUW, SF and SFF
Types TF, T, TW and THW

Size AWG or MCM	Maximum Number of Conductors in Conduit or Tubing (Based upon % conductor fill, Table 3, Ch. 10, for new work)															
	1/2 In.	3/4 In.	1 In.	1 1/4 In.	1 1/2 In.	2 In.	2 1/2 In.	3 In.	3 1/2 In.	4 In.	5 In.	6 In.	8 In.	10 In.	12 In.	14 In.
18	7	12	20	35	49	80	115	175								
16	6	10	17	30	41	68	98	150								
14	4	6	10	18	25	41	58	90	121	155						
12	3	5	8	15	21	34	50	76	103	132	208					
10	1	4	7	13	17	29	41	64	86	110	173					
8	1	3	4	7	10	17	25	38	52	67	105	152				
6	1	1	3	4	6	10	15	23	32	41	64	93				
4	1	1	1	3	5	8	12	18	24	31	49	72				
3	1	1	1	3	4	7	10	16	21	28	44	63				
2	1	1	1	3	3	6	9	14	19	24	38	55				
1	1	1	1	1	3	4	7	10	14	18	29	42				
0			1	1	2	4	6	9	12	16	25	37				
00			1	1	1	3	5	8	11	14	22	32				
000			1	1	1	3	4	7	9	12	19	27				
0000			1	1	1	2	3	6	8	10	16	23				
250				1	1	1	3	5	6	8	13	19				
300				1	1	1	3	4	5	7	11	16				
350				1	1	1	1	3	5	6	10	15				
400				1	1	1	1	3	4	6	9	13				
500				1	1	1	1	3	4	5	8	11				
600					1	1	1	1	3	4	6	9				
700					1	1	1	3	3	6	8					
750					1	1	1	3	3	5	8					
800					1	1	1	2	3	5	7					
900					1	1	1	1	3	4	7					
1000					1	1	1	1	3	4	6					
1250						1	1	1	1	3	5					
1500							1	1	1	3	4					
1750								1	1	2	4					
2000								1	1	1	3					

Table 3: Combination of Conductors

For groups or combinations of conductors not included in Table 1, it is recommended that the conduit or tubing be of such size that the sum of the cross-sectional areas of the individual conductors will not be more than the percentage of the interior cross-sectional area of the conduit or tubing shown in the following table:

Per Cent Area of Conduit or Tubing

	Number of Conductors				
	1	2	3	4	Over 4
Conductors (not lead covered)	53	31	43	40	40
Lead-covered conductors . . .	55	30	40	38	35
For rewiring existing raceways for increased load where it is impracticable to increase the size of the raceway due to structural conditions.	60	40	50	50	50

See Note to Table 5 for size of conduit or tubing for combinations of conductors not shown in Table 1.

**Full Load Currents (Amperes)
Table 430-147: DC Motors**

HP	115V	230V	550V
1/4	3.8	1.5	..
1/2	5.4	1.9	..
3/4	7.4	2.7	..
1	9.6	3.7	1.6
1 1/2	13.2	4.8	2.0
2	17	6.6	2.7
3	25	8.5	3.6
		12.5	5.2
5	40	20	8.3
7 1/2	58	29	12
10	76	38	16
15	112	56	23
20	148	74	31
25	184	92	38
30	220	110	46
40	292	146	61
50	360	180	75
60	430	215	90
75	536	268	111
100		355	148
125		443	184
150		534	220
200		712	295

These values of full-load currents are for motors running at usual speed.

Table 430-148: 1-Phase AC Motors

HP	115V	230V	440V
1/4	4.4	2.2	..
1/2	5.8	2.9	..
3/4	7.2	3.6	..
1	9.8	4.9	..
1 1/2	13.8	6.9	..
2	16	8	..
3	20	10	..
5	24	12	..
7 1/2	34	17	..
10	56	28	..
	80	40	21
	100	50	26

These values of full-load currents are for motors running at usual speeds and motors with normal torque characteristics. Motors built for especially low speeds or high torques may have higher full-load currents, in which case the nameplate current ratings should be used.

To obtain full-load currents of 208 and 200-volt motors, increase corresponding 230-volt motor full-load currents by 10 and 15 per cent, respectively.

Table 430-150: 3-Phase AC Motors

HP	Induction Type Squirrel-Cage and Wound Rotor Amperes					Synchronous Type Unity Power Factor Amperes			
	110V	220V	440V	550V	2300V	220V	440V	550V	2300V
1/4	4	2	1	.8					
1/2	5.6	2.8	1.4	1.1					
3/4	7	3.5	1.8	1.4					
1	10	5	2.5	2.0					
1 1/2	13	6.5	3.3	2.6					
2		9	4.5	4					
3		15	7.5	6					
5		22	11	9					
7 1/2		27	14	11					
10		40	20	16					
15		52	26	21					
20		64	32	26	7	54	27	22	5.4
25		78	39	31	8.5	65	33	26	6.5
30		104	52	41	10.5	86	43	35	8
40		125	63	50	13	108	54	44	10
50		150	75	60	16	128	64	51	12
60		185	93	74	19	161	81	65	15
75		246	123	98	25	211	106	85	20
100		310	155	124	31	264	132	106	25
125		360	180	144	37		158	127	30
150		480	240	192	48		210	168	40

For full-load currents of 208 and 200-volt motors, increase the corresponding 220-volt motor full-load current by 6 and 10 per cent, respectively.

These values of full-load current are for motors running at speeds usual for belted motors and motors with normal torque characteristics. Motors built for especially low speeds or high torques may require more running current, in which case the nameplate current rating should be used. For 90 and 95 per cent P.F. the above figures should be multiplied by 1.1 and 1.25 respectively.

CODE TABLES (continued)

Table 4—Dimensions and Per Cent Area of Conduit and of Tubing
Areas of Conduit or Tubing for the Combinations of Wires Permitted in Table 3

Trade Size	Internal Diameter Inches	Area—Square Inches									
		Total 100%	Not Lead Covered				Lead Covered				
			1 Cond. 53%	2 Cond. 31%	3 Cond. 43%	4 Cond. and Over 40%	1 Cond. 55%	2 Cond. 30%	3 Cond. 40%	4 Cond. 38%	Over 4 Cond. 35%
1/2	.622	.30	.16	.09	.13	.12	.17	.09	.12	.11	.11
3/4	.824	.53	.28	.16	.23	.21	.29	.16	.21	.20	.19
1	1.049	.86	.46	.27	.37	.34	.47	.26	.34	.33	.30
1 1/4	1.380	1.50	.80	.47	.65	.60	.83	.45	.60	.57	.53
1 1/2	1.610	2.04	1.08	.63	.88	.82	1.12	.61	.82	.78	.71
2	2.067	3.36	1.78	1.04	1.44	1.34	1.85	1.01	1.34	1.28	1.18
2 1/2	2.469	4.79	2.54	1.48	2.06	1.92	2.63	1.44	1.92	1.82	1.68
3	3.068	7.38	3.91	2.29	3.17	2.95	4.06	2.21	2.95	2.80	2.58
3 1/2	3.548	9.90	5.25	3.07	4.26	3.96	5.44	2.97	3.96	3.76	3.47
4	4.026	12.72	6.74	3.94	5.47	5.09	7.00	3.82	5.09	4.83	4.45
5	5.047	20.00	10.60	6.20	8.60	8.00	11.00	6.00	8.00	7.60	7.00
6	6.065	28.89	15.31	8.96	12.42	11.56	15.89	8.67	11.56	10.98	10.11

Table 5—Dimensions of Rubber-Covered and Thermoplastic-Covered Conductors

Size AWG MCM	Types RF-2, RFH-2, R, RH, RHH, RHW, RH-RW, RW THW		Types TF, T, TW, RU**, RUH**, RUW	
	Approx. Diam. Inches	Approx. Area Sq. Ins.	Approx. Diam. Inches	Approx. Area Sq. Ins.
18	.146	.0167	.106	.0088
16	.158	.0196	.118	.0109
14	2/64 in. .171	.0230	.131	.0135
14	3/64 in. .204*	.0327*		
12	2/64 in. .188	.0278	.148	.0172
12	3/64 in. .221*	.0384*		
10	.242	.0460	.168	.0224
8	.311	.0760	.228	.0408
6	.397	.1238	.323	.0819
4	.452	.1605	.372	.1087
3	.481	.1817	.401	.1263
2	.513	.2067	.433	.1473
1	.588	.2715	.508	.2027
0	.629	.3107	.549	.2367
00	.675	.3578	.595	.2781
000	.727	.4151	.647	.3288
0000	.785	.4840	.705	.3904
250	.868	.5917	.788	.4877
300	.933	.6837	.843	.5581
350	.985	.7620	.895	.6291
400	1.032	.8365	.942	.6969
500	1.119	.9834	1.029	.8316
600	1.233	1.1940	1.143	1.0261
700	1.304	1.3355	1.214	1.1575
750	1.339	1.4082	1.249	1.2252
800	1.372	1.4784	1.282	1.2908
900	1.435	1.6173	1.345	1.4208
1000	1.494	1.7531	1.404	1.5482
1250	1.676	2.2062	1.577	1.9532
1500	1.801	2.5475	1.702	2.2748
1750	1.916	2.8895	1.817	2.5930
2000	2.021	3.2079	1.922	2.9013

*The dimensions of Type RW, RHH and THW wire. Also, these dimensions to be used for new work in computing size of conduit or tubing for combinations of wires not shown in Table 1.

**No. 14 to No. 2.

No. 18 to No. 8, solid; No. 6 and larger, stranded.

The dimensions of rubber-covered conductors in column 3 of this table are to be used in computing the size of conduit or tubing for new work for combinations not shown in Table 1. The dimensions in the last column of this table may be used only for rewiring existing raceways.

Note: The above tables give the nominal size of conductors and conduit or tubing recommended for use in computing size of conduit or tubing for various combinations of conductors. The dimensions represent average conditions only, and while variations will be found in dimensions of conductors and conduits of different manufacture, these variations will not affect the computation.

Table 6—Dimensions of Lead-Covered Conductors
Types RL, RHL, and RUL

Size AWG MCM	Single Conductor		Two Conductor		Three Conductor	
	Diam. Inches	Area Sq. Ins.	Diam. Inches	Area Sq. Ins.	Diam. Inches	Area Sq. Ins.
14	.28	.062	.28 x .47	.115	.59	.273
12	.29	.066	.31 x .54	.146	.62	.301
10	.35	.096	.35 x .59	.180	.68	.363
8	.41	.132	.41 x .71	.255	.82	.528
6	.49	.188	.49 x .86	.369	.97	.738
4	.55	.237	.54 x .96	.457	1.08	.916
2	.60	.283	.61 x 1.08	.578	1.21	1.146
1	.67	.352	.70 x 1.23	.756	1.38	1.49
0	.71	.396	.74 x 1.32	.859	1.47	1.70
00	.76	.454	.79 x 1.41	.980	1.57	1.94
000	.81	.515	.84 x 1.52	1.123	1.69	2.24
0000	.87	.593	.90 x 1.64	1.302	1.85	2.68
250	.98	.754	.....	.....	2.02	3.20
300	1.04	.85	.....	.....	2.15	3.62
350	1.10	.95	.....	.....	2.26	4.02
400	1.14	1.02	.....	.....	2.40	4.52
500	1.23	1.18	.....	.....	2.59	5.28

Note—No. 14 to No. 8, solid conductors; No. 6 and larger, stranded conductors. Data for 2/64-inch insulation not yet compiled.

Varnished-Cambric Insulated Conductors

Type V

The insulation thickness for varnished-cambric conductors, Type V, is the same as for rubber-covered conductors, Type R, except for Nos. 14 and 12 which have 3/64-inch insulation for varnished-cambric, and 2/64-inch insulation for rubber-covered conductors and for No. 8 which has 3/64-inch insulation for varnished-cambric, and 4/64-inch insulation for rubber-covered conductors. Tables 1 and 2 may, therefore, be used for the number of varnished-cambric insulated conductors in a conduit or tubing.

CODE TABLES (continued)

Table 430-152. Maximum Rating or Setting of Motor-Branch-Circuit Protective Devices for Motors Marked with a Code Letter Indicating Locked Rotor KVA

Type of Motor	Per Cent of Full-Load Current		
	Fuse Rating (See also Table 430-146, Columns 4, 5, 6, 7)	Instantaneous Type	Time Limit Type
All AC single-phase and polyphase squirrel cage and synchronous motors with full-voltage, resistor or reactor starting:			
Code Letter A	150	.....	150
Code Letter B to E	250	.....	200
Code Letter F to V	300	.....	250
All AC squirrel cage and synchronous motors with auto-transformer starting:			
Code Letter A	150	.....	150
Code Letter B to E	200	.....	200
Code Letter F to V	250	.....	200

Synchronous motors of the low-torque, low-speed type (usually 450 RPM or lower), such as are used to drive reciprocating compressors, pumps, etc., which start up unloaded, do not require a fuse rating or circuit-breaker setting in excess of 200 percent of full-load current.

Table 430-153. Maximum Rating or Setting of Motor-Branch-Circuit Protective Devices for Motors not Marked with a Code Letter Indicating Locked Rotor KVA

Type of Motor	Per Cent of Full-Load Current		
	Fuse Rating (See also Table 430-146, Columns 4, 5, 6, 7)	Instantaneous Type	Time Limit Type
1-phase, all types	300	.....	250
Squirrel-cage and synchronous (full-voltage, resistor and reactor starting)	300	.....	250
Squirrel-cage and synchronous (auto-transformer starting)			
Not more than 30 amperes	250	.....	200
More than 30 amperes	200	.....	200
High-reactance squirrel-cage Not more than 30 amperes	250	.....	250
More than 30 amperes	200	.....	200
Wound-rotor	150	.....	150
Direct-current Not more than 50 H.P.	150	250	150
More than 50 H.P.	150	175	150

Table 430-7(b). Locked Rotor Indicating Code Letters

Code Letter	Kilovolt-Amperes per Horsepower with Locked Rotor	
A	0	3.14
B	3.15	3.54
C	3.55	3.99
D	4.0	4.49
E	4.5	4.99
F	5.0	5.59
G	5.6	6.29
H	6.3	7.09
J	7.1	7.99
K	8.0	8.99
L	9.0	9.99
M	10.0	11.19
N	11.2	12.49
P	12.5	13.99
R	14.0	15.99
S	16.0	17.99
T	18.0	19.99
U	20.0	22.39
V	22.4	and up

The above table is an adopted standard of the National Electrical Manufacturers Association.

The code letter indicating motor input with locked rotor must be in an individual block on the nameplate, properly designated. This code letter is to be used for determining branch circuit overcurrent protection by reference to Table 430-152.

Table 710-37: Isolation by Elevation

Distance of Live Parts Above the Floor or Other Working Surface

Voltage Between Phases	Minimum Vertical Clearance of Unguarded Parts	
	Feet	Inches
601	8	0
2300	8	0
6600	8	0
11000	9	0
22000	9	3
33000	9	6
44000	9	10
66000	10	5
88000	11	0
110000	11	7
132000	12	2

Table 710-38: Working Space

Minimum Clear Space Adjacent to Live Parts

Voltage Between Phases	Minimum Horizontal Clearance of Unguarded Parts	
	Feet	Inches
601	3	2
2300	3	3
6600	3	4
11000	3	6
22000	3	9
33000	4	0
44000	4	4
66000	4	11
88000	5	6
110000	6	1
132000	6	8

MAXIMUM NUMBER OF CONDUCTORS IN BOXES

Table 370-6(a-1): Deep Boxes

Box Dimensions Trade Size	Maximum Number of Conductors			
	No. 14	No. 12	No. 10	No. 8
1 1/2 x 3 1/4 octagonal	5	5	4	0
1 1/2 x 4 octagonal	8	7	6	5
1 1/4 x 4 square	9	7	6	4
1 1/2 x 4 square	11	9	7	5
1 1/2 x 4 11/16 square	16	12	10	8
2 1/8 x 4 11/16 square	20	16	12	10
2 x 1 3/4 x 2 3/4	5	4	4	
2 1/2 x 1 3/4 x 2 3/4	6	6	5	
3 x 1 3/4 x 2 3/4	7	7	6	

Where there is not sufficient space for a deeper box, four No. 14 AWG conductors may enter a box provided with cable clamps and containing one or more devices on a single mounting strap.

Table 370-6(a-2): Shallow Boxes (Less than 1 1/2" Depth)

Box Dimensions Trade Size	Maximum Number of Conductors			
	No. 14	No. 12	No. 10	No. 8
3 1/4	4	4	3	
4	6	6	4	
4 11/16	8	6	6	

The above tables apply where no fittings or devices, such as fixture studs, cable clamps, hickies, switches or receptacles are contained in the box. Where one or more fixture studs, cable clamps, or hickies are contained in the box, the number of conductors shall be one less than shown in the tables with a further deduction of one conductor for one or several flush devices mounted on the same strap. A conductor running through the box is counted as one conductor and each conductor originating outside the box and terminating inside the box is counted as one conductor. Conductors of which no part leaves the box are not to be counted in the above computation. If single flush boxes are ganged, and each section is occupied by a flush device or combination of flush devices on the same strap, the limitations will apply to each section individually.

Table 370-6(b): Other Combinations

Size of Conductor	Free Space Within Box for Each Conductor
No. 14	2. cubic inches
No. 12	2.25 cubic inches
No. 10	2.5 cubic inches
No. 8	3. cubic inches

CODE TABLES (continued)

PROTECTIVE DEVICES FOR RUNNING OVERLOAD PROTECTION AND BRANCH CIRCUIT PROTECTION

(Based on Rated Full-load Motor Current)
Table 430-146

Col. No. 1	2		3		4		5		6		7	
	For Running Protection of Motors		Maximum Allowable Rating or Setting of Branch Circuit Protective Devices		WITH CODE LETTERS		WITH CODE LETTERS		WITH CODE LETTERS		WITH CODE LETTERS	
Full load current rating of motor amperes	Maximum rating of non-adjustable protective devices.	Maximum setting of adjustable protective devices.	Single-phase squirrel cage and synchronous. Full voltage, resistor or reactor starting. Code letters F to V inclusive.		Single-phase squirrel cage and synchronous. Full voltage, resistor or reactor starting. Code letters F to V inclusive.		Single-phase squirrel cage and synchronous. Full voltage, resistor or reactor starting. Code letters F to V inclusive.		Single-phase squirrel cage and synchronous auto transformer start. Code letters B to E inclusive.		All motors code letter A.	
			WITHOUT CODE LETTERS Same as above.		WITHOUT CODE LETTERS (Not more than 30 Amperes) Squirrel cage and synchronous, auto transformer start, high reactance squirrel cage.		WITHOUT CODE LETTERS (More than 30 Amperes) Squirrel cage and synchronous, auto transformer start, high reactance squirrel cage.		WITHOUT CODE LETTERS (More than 30 Amperes) Squirrel cage and synchronous, auto transformer start, high reactance squirrel cage.		WITHOUT CODE LETTERS DC and wound rotor motors.	
	Amperes	Amperes	Fuses	Circuit Breakers (Non-adjustable Overload Trip)	Fuses	Circuit Breakers (Non-adjustable Overload Trip)	Fuses	Circuit Breakers (Non-adjustable Overload Trip)	Fuses	Circuit Breakers (Non-adjustable Overload Trip)	Fuses	Circuit Breakers (Non-adjustable Overload Trip)
1	2	1.25	15	15	15	15	15	15	15	15	15	15
2	3	2.50	15	15	15	15	15	15	15	15	15	15
3	4	3.75	15	15	15	15	15	15	15	15	15	15
4	5	5.00	15	15	15	15	15	15	15	15	15	15
5	6	6.25	15	15	15	15	15	15	15	15	15	15
6	8	7.50	20	15	15	15	15	15	15	15	15	15
7	10	8.75	25	20	20	15	15	15	15	15	15	15
8	10	10.00	25	20	20	20	20	20	20	20	15	15
9	12	11.25	30	30	25	20	20	20	20	20	15	15
10	15	12.50	30	30	30	30	25	30	30	30	20	20
11	15	13.75	35	30	30	30	25	30	30	30	20	20
12	15	15.00	40	30	30	30	25	30	30	30	20	20
13	20	16.25	40	40	35	30	30	30	30	30	20	20
14	20	17.50	45	40	35	30	30	30	30	30	25	30
15	20	18.75	45	40	40	40	35	40	40	40	25	30
16	20	20.00	50	40	40	40	40	40	40	40	30	30
17	25	21.25	60	50	45	40	40	40	40	40	30	30
18	25	22.50	60	50	45	40	40	40	40	40	30	30
19	25	23.75	60	50	50	40	40	40	40	40	30	30
20	25	25.00	60	50	50	40	40	40	40	40	30	30
22	30	27.50	70	70	60	50	45	50	50	50	35	40
24	30	30.00	80	70	70	70	60	70	70	70	40	40
26	35	32.50	80	70	70	70	60	70	70	70	45	50
28	35	35.00	90	70	70	70	60	70	70	70	45	50
30	40	37.50	90	100	80	70	60	70	70	70	45	50
32	40	40.00	100	100	80	70	70	70	70	70	50	50
34	45	42.50	110	100	90	70	70	70	70	70	60	70
36	45	45.00	110	100	90	70	80	100	100	100	60	70
38	50	47.50	125	100	100	100	80	100	100	100	60	70
40	50	50.00	125	100	100	100	80	100	100	100	60	70
42	50	52.50	125	125	110	100	90	100	100	100	70	70
44	60	55.00	125	125	110	100	90	100	100	100	70	70
46	60	57.50	150	125	125	100	100	100	100	100	70	70
48	60	60.00	150	125	125	100	100	100	100	100	80	100
50	60	62.50	150	125	125	100	100	100	100	100	80	100
52	70	65.00	175	150	150	125	110	125	125	125	80	100
54	70	67.50	175	150	150	125	110	125	125	125	90	100
56	70	70.00	175	150	150	125	125	125	125	125	90	100
58	70	72.50	175	150	150	125	125	125	125	125	90	100
60	80	75.00	200	150	150	125	125	125	125	125	90	100
62	80	77.50	200	175	175	125	125	125	125	125	100	100
64	80	80.00	200	175	175	150	150	150	150	150	100	100
66	80	82.50	200	175	175	150	150	150	150	150	100	100
68	90	85.00	225	175	175	150	150	150	150	150	110	125
70	90	87.50	225	175	175	150	150	150	150	150	110	125
72	90	90.00	225	200	200	150	150	150	150	150	110	125
74	90	92.50	225	200	200	150	150	150	150	150	125	125
76	100	95.00	250	200	200	175	175	175	175	175	125	125
78	100	97.50	250	200	200	175	175	175	175	175	125	125
80	100	100.00	250	200	200	175	175	175	175	175	125	125
82	110	102.50	250	225	225	175	175	175	175	175	125	125
84	110	105.00	250	225	225	175	175	175	175	175	150	150
86	110	107.50	250	225	225	175	175	175	175	175	150	150
88	110	110.00	300	225	225	200	200	200	200	200	150	150
90	110	112.50	300	225	225	200	200	200	200	200	150	150
92	125	115.00	300	250	250	200	200	200	200	200	150	150
94	125	117.50	300	250	250	200	200	200	200	200	150	150
96	125	120.00	300	250	250	200	200	200	200	200	150	150
98	125	122.50	300	250	250	200	200	200	200	200	150	150
100	125	125.00	300	250	250	200	200	200	200	200	150	150
105	150	131.50	350	300	300	225	225	225	225	225	175	175
110	150	137.50	350	300	300	225	225	225	225	225	175	175
115	150	144.00	350	300	300	250	250	250	250	250	175	175
120	150	150.00	400	300	300	250	250	250	250	250	200	200
125	175	156.50	400	350	350	250	250	250	250	250	200	200
130	175	162.50	400	350	350	300	300	300	300	300	200	200
135	175	169.00	450	350	350	300	300	300	300	300	225	225
140	175	175.00	450	350	350	300	300	300	300	300	225	225
145	200	181.50	450	400	400	300	300	300	300	300	225	225
150	200	187.50	450	400	400	300	300	300	300	300	225	225
155	200	194.00	500	400	400	350	350	350	350	350	250	250
160	200	200.00	500	400	400	350	350	350	350	350	250	250
165	225	206.00	500	500	450	350	350	350	350	350	250	250
170	225	213.00	500	500	450	350	350	350	350	350	300	300
175	225	219.00	600	500	450	350	350	350	350	350	300	300
180	225	225.00	600	500	450	400	400	400	400	400	300	300
185	250	231.00	600	500	500	400	400	400	400	400	300	300
190	250	238.00	600	500	500	400	400	400	400	400	300	300
195	250	244.00	600	500	500	400	400	400	400	400	300	300
200	250	250.00	600	500	500	400	400	400	400	400	300	300
210	250	263.00	800	600	600	500	500	500	500	500	350	350
220	300	275.00	800	600	600	500	500	500	500	500	350	350
230	300	288.00	800	600	600	500	500	500	500	500	350	350
240	300	300.00	800	600	600	500	500	500	500	500	400	400
250	300	313.00	800	700	800	500	500	500	500	500	400	400
260	350	325.00	800	700	800	600	600	600	600	600	400	400
270	350	338.00	1000	700	800	600	600	600	600	600	450	500
280	350	350.00	1000	700	800	600	600	600	600	600	450	500

CODE TABLES (continued)

ALLOWABLE CURRENT-CARRYING CAPACITIES OF INSULATED CONDUCTORS (Amperes)

Not More Than Three Conductors in Raceway or Cable or Direct Burial
(Based on Room Temperature of 30°C, 86°F)

TABLE 310-12: COPPER

Size AWG MCM	Rubber Type R Type RW (14-2) Type RH-RW* Type T Type TW	Rubber Type RH Type RUH (14-2) Type RH-RW* Type RHW Thermo- plastic Type THW	Paper Thermo- plastic Asbestos Type TA Var-Cam Type V Asbestos Var-Cam Type AVB MI Cable RHH† SA	Asbestos Var-Cam Type AVA Type AVL	Impreg- nated Asbestos Type AI (14-8) Type AIA	Asbestos Type A (14-8) Type AA
14	15	15	25	30	30	30
12	20	20	30	35	40	40
10	30	30	40	45	50	55
8	40	45	50	60	65	70
6	55	65	70	80	85	95
4	70	85	90	105	115	120
3	80	100	105	120	130	145
2	95	115	120	135	145	165
1	110	130	140	160	170	190
0	125	150	155	190	200	225
00	145	175	185	215	230	250
000	165	200	210	245	265	285
0000	195	230	235	275	310	340
250	215	255	270	315	335	355
300	240	285	300	345	380	400
350	260	310	325	390	420	450
400	280	335	360	420	450	500
500	320	380	405	470	500	550
600	355	420	455	525	545	600
700	385	460	490	560	600	650
750	400	475	500	580	620	650
800	410	490	515	600	640	650
900	435	520	555	650	680	730
1000	455	545	585	680	730	780
1250	495	590	645	730	780	840
1500	520	625	700	780	840	900
1750	545	650	735	840	900	960
2000	560	665	775	880	940	1000

CORRECTION FACTORS, ROOM TEMPS. OVER 30°C, 86°F.

C.	F.	.82	.88	.90	.94	.95	.....
40	104	.82	.88	.90	.94	.95	.....
45	113	.71	.82	.85	.90	.92	.....
50	122	.58	.75	.80	.87	.89	.....
55	131	.41	.67	.74	.83	.86	.....
60	140	.....	.58	.67	.79	.83	.91
70	158	.....	.35	.52	.71	.76	.87
75	167	.....	.....	.43	.66	.72	.86
80	176	.....	.....	.30	.61	.69	.84
90	194	.....	.....	.....	.50	.61	.80
100	212	.....	.....	.....	.....	.51	.77
120	248	.....	.....	.....	.....	.....	.69
140	284	.....	.....	.....	.....	.....	.59

†The current-carrying capacities for Type RHH conductors for sizes AWG 14, 12 and 10 shall be the same as designated for Type RH conductors in this table.

* See Note 6a.

TABLE 310-14: ALUMINUM

Size AWG MCM	Rubber Type R, RW, RU, RUW (12-2) Type RH-RW** Type RHW Thermo- plastic Type T, TW	Rubber Type RH (14-2) Type RH-RW** Type RHW Thermo- plastic Type THW	Thermo- plastic Asbestos Type TA Var-Cam Type V Asbestos Var-Cam Type AVB MI Cable RHH† SA	Asbestos Var-Cam Type AVA Type AVL	Impreg- nated Asbestos Type AI (14-8) Type AIA	Asbestos Type A (14-8) Type AA
12	15	15	25	25	30	30
10	25	25	30	35	40	45
8	30	30	40	45	50	55
6	40	40	50	55	60	65
4	55	65	70	80	90	95
3	65	75	80	95	100	115
*1	75	90	95	105	115	130
	85	100	110	125	135	150
*0	100	120	125	150	160	180
*00	115	135	145	170	180	200
*000	130	155	165	195	210	225
*0000	155	180	185	215	245	270
250	170	205	215	250	270	290
300	190	230	240	275	305	325
350	210	250	260	310	335	355
400	225	270	290	335	360	380
500	260	310	330	380	405	430
600	285	340	370	425	440	470
700	310	375	395	455	485	520
750	320	385	405	470	500	520
800	330	395	415	485	520	550
900	355	425	455	560	600	650
1000	375	445	480	580	620	680
1250	405	485	530	650	700	750
1500	435	520	580	700	750	800
1750	455	545	615	750	800	850
2000	470	560	650	780	830	880

CORRECTION FACTORS, ROOM TEMPS. OVER 30°C, 86°F.

C.	F.	.82	.88	.90	.94	.95	.....
40	104	.82	.88	.90	.94	.95	.....
45	113	.71	.82	.85	.90	.92	.....
50	122	.58	.75	.80	.87	.89	.....
55	131	.41	.67	.74	.83	.86	.....
60	140	.....	.58	.67	.79	.83	.91
70	158	.....	.35	.52	.71	.76	.87
75	167	.....	.....	.43	.66	.72	.86
80	176	.....	.....	.30	.61	.69	.84
90	194	.....	.....	.....	.50	.61	.80
100	212	.....	.....	.....	.....	.51	.77
120	248	.....	.....	.....	.....	.....	.69
140	284	.....	.....	.....	.....	.....	.59

*For three wire, single phase service and sub-service circuits, the allowable current-carrying capacity of RH, RH-RW, RHH and RHW aluminum conductors shall be for sizes #2-100 Amp., #1-110 Amp., #1/0-125 Amp., #2/0-150 Amp., #3/0-170 Amp. and #4/0-200 Amp. (The current-carrying capacities for Type RHH conductors for sizes AWG 12, 10 and 8 shall be the same as designated for Type RH conductors in this table.)

**See Note 6a.

NOTES TO TABLES

4. Bare Conductors. Where bare conductors are used with insulated conductors, their allowable current-carrying capacity shall be limited to that permitted for the insulated conductors of the same size.

5. Type MI Cable. The temperature limitation on which the current carrying capacities of Type MI cable are based, is determined by the insulating materials used in the end seal. Termination fittings incorporating unimpregnated organic insulating materials are limited to 85°C. operation.

7. Use of Conductors With Higher Operating Temperatures. Where the room temperature is within 10 degrees C. of the maximum allowable operating temperature of the insulation, it is desirable to use an insulation with a higher maximum allowable operating temperature; although insulation can be used in a room temperature approaching its maximum allowable operating temperature limit if the current is reduced in accordance with the Correction Factors for different room temperatures.

8. More Than Three Conductors in a Raceway. Tables 310-12 and 310-14 give the allowable current-carrying capacities for not more than three conductors in a raceway or cable. Where the number of conductors in a raceway or cable exceeds three, the allowable current-carrying capacity of each conductor shall be reduced as shown in the following Table:

Number of Conductors	Per Cent of Tabular Values
4 to 6	80
7 to 24	70
25 to 42	60
43 and above	50

Exception—When conductors of different systems, as provided in Section 300-3, are installed in a common raceway the derating factors shown above apply to the number of Power and Lighting (Articles 210, 220 and 230) conductors only.

8. (a) Where Type RH-RW rubber insulated wire is used in wet locations the allowable current carrying capacities shall be that of Column 2 in Tables 310-12 through 310-15. Where used in dry locations the allowable current carrying capacities shall be that of Column 3 in Tables 310-12 through 310-15.

9. Overcurrent Protection. Where the standard ratings and settings of overcurrent devices do not correspond with the ratings and settings allowed for conductors, the next higher standard rating and setting may be used.

10. Neutral Conductor. A neutral conductor which carries only the unbalanced current from other conductors, as in the case of normally balanced circuits of three or more conductors, shall not be counted in determining current-carrying capacities as provided for in Paragraph 8 of these notes.

In a 3-wire circuit consisting of two phase wires and the neutral of a 4-wire, 3-phase system, a common conductor carries approximately the same current as the other conductors and is not therefore considered as a neutral conductor.

11. Voltage Drop. The allowable current-carrying capacities in Tables 310-12 through 310-15 are based on temperature alone and do not take voltage drop into consideration.

12. Deterioration of Insulation. It should be noted that even the best grades of rubber insulation will deteriorate in time, so eventually will need to be replaced.

DC CIRCUIT CHARACTERISTICS

Ohm's Law:

$$E = IR \quad I = \frac{E}{R} \quad R = \frac{E}{I}$$

E = voltage impressed on circuit (volts)
I = current flowing in circuit (amperes)
R = circuit resistance (ohms)

In direct current circuits, electrical power is equal to the product of the voltage and current:

$$P = EI = I^2R = \frac{E^2}{R}$$

P = power (watts)
E = voltage (volts)
I = current (amperes)
R = resistance (ohms)

AC CIRCUIT CHARACTERISTICS

The instantaneous values of an alternating current or voltage vary from zero to a maximum value each half cycle. In the practical formulae which follow, the "effective value" of current and voltage is used, defined as follows:

Effective value = 0.707 × maximum instantaneous value

Impedance:

Impedance is the total opposition to the flow of alternating current. It is a function of resistance, capacitive reactance and inductive reactance. The following formulae relate these circuit properties:

$$X_L = 2\pi fL \quad X_C = \frac{1}{2\pi fC} \quad Z = \sqrt{R^2 + (X_L - X_C)^2}$$

X_L = inductive reactance (ohms)
 X_C = capacitive reactance (ohms)
Z = impedance (ohms)
f = frequency (cycles per second)
C = capacitance (farads)
L = inductance (henrys)
R = resistance (ohms)
 $\pi = 3.14$

Ohm's Law for AC Circuits:

$$E = I \times Z \quad I = \frac{E}{Z} \quad Z = \frac{E}{I}$$

POWER FACTOR

Power factor of a circuit or system is the ratio of actual power (watts) to apparent power (volt-amperes), and is equal to the cosine of the phase angle of the circuit:

$$PF = \frac{\text{actual power}}{\text{apparent power}} = \frac{\text{watts}}{\text{volts} \times \text{amperes}} = \frac{KW}{KVA} = \frac{R}{Z}$$

KW = kilowatts
KVA = kilovolt-amperes = volt-amperes × 1,000
PF = power factor (expressed as decimal)

SINGLE-PHASE CIRCUITS

$$KVA = \frac{EI}{1,000} = \frac{KW}{PF} \quad KW = KVA \times PF$$

$$I = \frac{P}{E \times PF} \quad E = \frac{P}{I \times PF} \quad PF = \frac{P}{E \times I}$$

$$P = E \times I \times PF$$

P = power (watts)

THREE-PHASE CIRCUITS, BALANCED STAR OR WYE

$$I_N = 0 \quad I = I_p \quad E = \sqrt{3} E_p = 1.73 E_p$$

$$E_p = \frac{E}{\sqrt{3}} = \frac{E}{1.73} = 0.577 E$$

I_N = current in neutral (amperes)
I = line current per phase (amperes)
 I_p = current in each phase winding (amperes)
E = voltage, phase to phase (volts)
 E_p = voltage, phase to neutral (volts)

THREE-PHASE CIRCUITS, BALANCED DELTA

$$I = 1.732 \times I_p \quad I_p = \frac{I}{\sqrt{3}} = 0.577 \times I$$

$$E = E_p$$

POWER: BALANCED 3-WIRE, 3-PHASE CIRCUIT, DELTA OR WYE

For unity power factor (PF = 1.0):

$$P = 1.732 \times E \times I$$

$$I = \frac{P}{\sqrt{3} E} = \frac{0.577 P}{E} \quad E = \frac{P}{\sqrt{3} \times I} = \frac{0.577 P}{I}$$

P = total power (watts)

For any load:

$$P = 1.732 \times E \times I \times PF \quad VA = 1.732 \times E \times I$$

$$E = \frac{P}{PF \times 1.73 \times I} = \frac{0.577 \times P}{PF \times I}$$

$$I = \frac{P}{PF \times 1.73 \times E} = \frac{0.577 \times P}{PF \times E}$$

$$PF = \frac{P}{1.73 \times I \times E} = \frac{0.577 \times P}{I \times E}$$

VA = apparent power (volt-amperes)
P = actual power (watts)
E = line voltage (volts) phase to phase
I = line current (amperes)

POWER LOSS: ANY AC OR DC CIRCUIT

$$P = I^2 R \quad I = \sqrt{\frac{P}{R}} \quad R = \frac{P}{I^2}$$

P = power heat loss in circuit (watts)
I = effective current in conductor (amperes)
R = conductor resistance (ohms)

CONVERSION TABLES

KILOWATTS TO HORSEPOWER					
kw	hp	kw	hp	kw	hp
1	1.341	30	40.218	130	174.28
2	2.681	32	42.899	140	187.68
3	4.022	34	45.580	150	201.09
4	5.363	36	48.261	160	214.50
5	6.703	38	50.943	170	227.90
6	8.044	40	53.624	180	241.31
7	9.384	42	56.305	190	254.71
8	10.725	44	58.986	200	268.12
9	12.065	46	61.667	220	294.93
10	13.406	48	64.349	240	321.74
11	14.747	50	67.030	260	348.56
12	16.087	55	72.733	280	375.37
13	17.428	60	80.436	300	402.18
14	17.768	65	87.139	325	435.69
15	20.109	70	93.842	350	469.21
16	21.450	75	100.545	400	536.24
17	22.790	80	107.248	450	603.27
18	24.131	85	113.951	500	670.30
19	25.471	90	120.654	600	804.36
20	26.812	95	127.357	700	938.42
22	29.493	100	134.060	800	1072.48
24	32.174	110	147.47	900	1206.54
26	34.856	120	160.87	1000	1340.60
28	37.537				

HORSEPOWER TO KILOWATTS					
hp	kw	hp	kw	hp	kw
1	.746	30	22.380	130	96.98
2	1.492	32	23.872	140	104.44
3	2.238	34	25.364	150	111.90
4	2.984	36	26.856	160	119.36
5	3.730	38	28.348	170	126.82
6	4.476	40	29.840	180	134.28
7	5.222	42	31.332	190	141.74
8	5.968	44	32.824	200	149.20
9	6.714	46	34.316	220	164.12
10	7.460	48	35.808	240	179.04
11	8.206	50	37.300	260	193.96
12	8.952	55	41.03	280	208.88
13	9.698	60	44.76	300	223.80
14	10.444	65	48.49	325	242.45
15	11.190	70	52.22	350	261.1
16	11.936	75	55.95	400	298.4
17	12.682	80	59.68	450	335.7
18	13.428	85	63.41	500	373.0
19	14.174	90	67.14	600	447.6
20	14.920	95	70.87	700	522.2
22	16.412	100	74.60	800	596.8
24	17.904	110	82.06	900	671.4
26	19.396	120	89.52	1000	746.0
28	20.888				

Note: Conversions not given may be obtained by adding appropriate given values.

DECIMAL EQUIVALENTS			
Fraction	Decimal	Fraction	Decimal
1/64 =	0.015625	33/64 =	0.515625
1/32 =	0.031250	17/32 =	0.531250
3/64 =	0.046875	35/64 =	0.546875
1/16 =	0.062500	9/16 =	0.562500
5/64 =	0.078125	37/64 =	0.578125
3/32 =	0.093750	19/32 =	0.593750
7/64 =	0.109375	39/64 =	0.609375
1/8 =	0.125000	5/8 =	0.625000
9/64 =	0.140625	41/64 =	0.640625
5/32 =	0.156250	21/32 =	0.656250
11/64 =	0.171875	43/64 =	0.671875
3/16 =	0.187500	11/16 =	0.687500
13/64 =	0.203125	45/64 =	0.703125
7/32 =	0.218750	23/32 =	0.718750
15/64 =	0.234375	47/64 =	0.734375
1/4 =	0.250000	3/4 =	0.750000
17/64 =	0.265625	49/64 =	0.765625
9/32 =	0.281250	25/32 =	0.781250
19/64 =	0.296875	51/64 =	0.796875
5/16 =	0.312500	13/16 =	0.812500
21/64 =	0.328125	53/64 =	0.828125
11/32 =	0.343750	27/32 =	0.843750
23/64 =	0.359375	55/64 =	0.859375
3/8 =	0.375000	7/8 =	0.875000
25/64 =	0.390625	57/64 =	0.890625
13/32 =	0.406250	29/32 =	0.906250
27/64 =	0.421875	59/64 =	0.921875
7/16 =	0.437500	15/16 =	0.937500
29/64 =	0.453125	61/64 =	0.953125
15/32 =	0.468750	31/32 =	0.968750
31/64 =	0.484375	63/64 =	0.984375
1/2 =	0.500000		

TEMPERATURE			
Centigrade	Fahrenheit	Centigrade	Fahrenheit
-18	-0.4	52	125.6
-16	3.2	54	129.2
-14	6.8	56	132.8
-12	10.4	58	136.4
-10	14.0	60	140.0
-8	17.6	62	143.6
-6	21.2	64	147.2
-4	24.8	66	150.8
-2	28.4	68	154.4
*0	32.0	70	158.0
2	35.6	72	161.6
4	39.2	74	165.2
6	42.8	76	168.8
8	46.4	78	172.4
10	50.0	80	176.0
12	53.6	82	179.6
14	57.2	84	183.2
16	60.8	86	186.8
18	64.4	88	190.4
20	68.0	90	194.0
22	71.6	92	197.6
24	75.2	94	201.2
26	78.8	96	204.8
28	82.4	98	208.4
30	86.0	**100	212.0
32	89.6	102	215.6
34	93.2	104	219.2
36	96.8	106	222.8
38	100.4	108	226.4
40	104.0	110	230.0
42	107.6	112	233.6
44	111.2	114	237.2
46	114.8	116	240.8
48	118.4	118	244.4
50	122.0	120	248.0

*Freezing

**Boiling

$$\text{Conversion Method } F = \frac{9}{5}C + 32$$

$$C = \frac{5}{9}(F - 32)$$

CONVERSION FACTORS (continued)

These units	multiplied by	equal	These units	multiplied by	equal
amperes per square cm.	6.452	amperes per sq. inch.	ergs per second	1.341×10^{-10}	horse-power.
ampere-turns	1.257	gilberts.		10^{-10}	kilowatts.
ampere-turns per cm.	2.540	ampere-turns per inch.	feet of water	62.43	pounds per square foot.
British thermal units	778.3	foot pounds.		0.4335	pounds per square inch.
	3.931×10^{-4}	horse-power-hours.	feet per minute	0.01667	feet per second.
	1055	joules.		0.01136	miles per hour.
	2.930×10^{-4}	kilowatt hours.	feet per second	0.5921	knots.
B.t.u. per min.	12.97	foot-pounds per sec.		0.6818	miles per hour.
	0.02357	horse-power.		0.01136	miles per minute.
	0.01758	kilowatts.	feet per second per second	0.6818	miles per hour per sec.
	17.58	watts.	foot-pounds	1.285×10^{-3}	British thermal units.
B.t.u. per sq. ft. per min.	0.1221	watts per square inch.		1.356×10^{-7}	ergs.
centimeters	3.281×10^{-2}	feet.		5.050×10^{-7}	horse-power-hours.
	0.3937	inches.		1.356	joules.
	6.214×10^{-4}	miles.		3.766×10^{-7}	kilowatt-hours.
	393.7	mils.	foot-pounds per minute	1.285×10^{-3}	B.t. units per minute.
	1.094×10^{-2}	yards.		0.01667	foot pounds per second.
centimeter-dynes	7.376×10^{-4}	pound-foot.		3.030×10^{-5}	horse-power.
centimeter-grams	7.233×10^{-5}	pound-foot.		2.260×10^{-5}	kilowatts.
centimeters per second	1.969	feet per minute.	foot-pounds per second	7.709×10^{-3}	B.t. units per minute.
	0.03281	feet per second.		1.818×10^{-3}	horse-power.
	0.02237	miles per hour.		1.356×10^{-3}	kilowatts.
	3.728×10^{-4}	miles per minute.	gallons	0.1337	cubic feet.
cms. per sec. per sec.	0.03281	feet per sec. per sec.		231	cubic inches.
circular mils	7.854×10^{-7}	square inches.	gallons per minute	2.228×10^{-3}	cubic feet per second.
	0.7854	square mils.	gausses	6.452	lines per square inch.
cubic centimeters	3.531×10^{-5}	cubic feet.	gilberts	0.7958	ampere-turns.
	6.102×10^{-2}	cubic inches.	gilberts per centimeter	2.021	ampere-turns per inch.
cubic feet	1728	cubic inches.	grams	980.7	dynes.
	0.03704	cubic yards.		15.43	grains.
	7.481	gallons.		0.03527	ounces.
	59.84	pints (liq.).		0.03215	ounces (tray).
	29.92	quarts (liq.).		2.205×10^{-3}	pounds.
cubic feet per minute	0.1247	gallons per sec.	horse-power	42.40	B.t. units per min.
	62.4	pounds of water per min.		33,000	foot-pounds per minute.
cubic inches	5.787×10^{-4}	cubic feet.		550	foot-pounds per second.
	2.143×10^{-5}	cubic yards.		1.014	horse-power (metric).
	4.329×10^{-3}	gallons.		0.7457	kilowatts.
	1.061×10^5	mil-feet.		745.7	watts.
	0.03463	pints (liq.).	horse-power (boiler)	33.520	B.t.u. per hour.
	0.01732	quarts (liq.).		9.804	kilowatts.
cubic meters	35.31	cubic feet.	horse-power-hours	2544	British thermal units.
	61,023	cubic inches.		1.98×10^4	foot-pounds.
	1.308	cubic yards.		2.684×10^4	joules.
	264.2	gdllons.		0.7455	kilowatt-hours.
	2113	pints (liq.).	inches	8.333×10^{-2}	feet.
	1057	quarts (liq.).		1.578×10^{-5}	miles.
cubic yards	27	cubic feet.		10^3	mils.
	202.0	gallons.		2.778×10^{-2}	yards.
cubic yards per minute	0.45	cubic feet per second.	inches of water	0.5781	ounces per square inch.
	3.367	gallons per second.		5.204	pounds per square foot.
degrees (angle)	60	minutes.		0.03613	pounds per square inch.
	0.01745	radians.	joules (Int.)	9.480×10^{-4}	British thermal units.
	3600	seconds.		10^7	ergs.
degrees per second	0.01745	radians per second.		0.7378	foot-pounds.
	0.1667	revolutions per minute.		2.778×10^{-4}	watt-hours.
	0.002778	revolutions per second.	kilograms	980,665	dynes.
dynes	2.248×10^{-5}	pounds.		2.205	pounds.
ergs	9.480×10^{-11}	British thermal units.		1.102×10^{-3}	tons (short).
	1	dyne-centimeters.	kilolines	10^3	maxwells.
	7.378×10^{-8}	foot-pounds.	kilowatts	56.88	B.t. units per min.
	10^{-7}	joules.		4.427×10^4	foot-pounds per min.
ergs per second	5.688×10^{-9}	B.t. units per minute.		737.8	foot-pounds per sec.
	4.427×10^{-6}	foot-pounds per minute.		1.341	horse-power.
	7.378×10^{-8}	foot-pounds per second.		10^3	watts.

CONVERSION FACTORS (continued)

These units	multiplied by	equal	These units	multiplied by	equal
kilowatt-hours	3413 2.656X10 ⁶ 1.341 3.6X10 ⁶	British thermal units. foot-pounds. horse-power-hours. joules.	quarts (dry)	67.20	cubic inches.
lines per square cm.	1	gausses.	quarts (liq.)	3.342X10 ⁻³ 57.75	cubic feet. cubic inches.
lines per square inch	0.1550	gausses.	radians	57.30 3438 0.6366	degrees. minutes. quadrants.
lumens per sq. ft.	1	foot-candles.	radians per second	57.30 9.549 0.1592	degrees per second. revolutions per minute. revolutions per second.
maxwells	10 ⁻³	kilolines.	revolutions	360 4 6.283	degrees. quadrants. radians.
megalines	10 ⁶	maxwells.	revolutions per minute	6 0.1047 0.01667	degrees per second. radians per second. revolutions per second.
megohms	10 ⁶	ohms.	revolutions per second	360 6.283 60	degrees per second. radians per second. revs. per minute.
meters	3.281 39.37 6.214X10 ⁻⁴	feet. inches. miles.	revs. per sec. per sec.	6.283 3600 60	radians per sec. per sec. revs. per min. per min. revs. per min. per sec.
meters per minute	3.281 0.05468 0.03728	feet per minute. feet per second. miles per hour.	seconds (angle)	4.848X10 ⁻⁶	radians.
meters per second	196.8 3.281 2.237 0.03728	feet per minute. feet per second. miles per hour. miles per minute.	square centimeters	1.973X10 ⁶ 1.076X10 ⁻³ 0.1550	circular mils. square feet. square inches.
microhms	10 ⁻¹² 10 ⁻⁶	megohms. ohms.	square feet	2.296X10 ⁻³ 1.833X10 ⁶ 144	acres. circular mils. square inches.
miles	5280 6.336X10 ⁴	feet. inches.	square inches	1.273X10 ⁶ 6.944X10 ⁻³ 10 ⁶	circular mils. square feet. square mils.
miles per hour	88 1.467	feet per minute. feet per second.	square meters	2.471X10 ⁻⁶ 10.76 1550 3.861X10 ⁻⁷	acres. square feet. square inches. square miles.
miles per hr. per sec.	1.467	feet per sec. per sec.	square miles	640 27.88X10 ⁶ 3.098X10 ⁶	acres. square feet. square yards.
miles per minute	88 52.10 60	feet per second. knots. miles per hour.	square millimeters	1.973X10 ³	circular mils.
mil-feet	9.425X10 ⁻⁶	cubic inches.	square mils	1.273 10 ⁻⁶	circular mils. square inches.
millihenries	10 ⁻³	henries.	square yards	9 3.228X10 ⁻⁷	square feet. square miles.
millimeters	3.281X10 ⁻³ 0.03937 6.214X10 ⁻⁷ 39.37	feet. inches. miles. mils.	temp. (deg. Cent.) - 273	1	abs. temp. (deg. Cent.).
mils	8.333X10 ⁻³ 10 ⁻³	feet. inches.	temp. (deg. Cent.) - 17.8	1.8	temp. (deg. Fahr.).
minutes (angle)	2.909X10 ⁻⁴	radians.	temp. (deg. Fahr.) - 460	1	abs. temp. (deg. Fahr.).
ohms	10 ⁻⁶ 10 ⁶	megohms. microhms.	temp. (deg. Fahr.) - 32	5/9	temp. (deg. Cent.).
ounces	0.0625	pounds.	tons (long)	2240	pounds.
ounces (troy)	480 0.08333	grains. pounds (troy).	tons (metric)	2205	pounds.
ounces per square inch	0.0625	pounds per square inch.	tons (short)	2000	pounds.
pounds	444.823 16	dynes. ounces.	tons (short) per sq. ft.	13.89	pounds per square inch.
pounds (troy)	0.8229	pounds (av.).	tons (short) per sq. in.	2000	pounds per square inch.
pounds-feet squared	144	pounds-inches squared.	watts	0.05688 10 ⁷ 44.27 0.7378 1.341X10 ⁻³ 10 ⁻³	B.t. units per min. ergs per second. foot-pounds per min. foot-pounds per second. horse-power. kilowatts.
pounds-inches squared	6.943X10 ⁻²	pounds-feet squared.	watt-hours	3.413 2656 1.341X10 ⁻³ 10 ⁻³	British thermal units. foot-pounds. horse-power-hours. kilowatt-hours.
pounds of water	0.01602 27.68 0.1198	cubic feet. cubic inches. gallons.	webers	10 ⁸	maxwells.
pounds of water per min.	2.669X10 ⁻⁶	cubic feet per sec.	yards	3 36 5.682X10 ⁻⁴	feet. inches. miles.
pounds per cubic foot	5.787X10 ⁻⁶ 5.456X10 ⁻⁹	pounds per cubic inch. pounds per mil foot.			
pounds per cubic inch	1728 9.425X10 ⁻⁶	pounds per cubic foot. pounds per mil foot.			
pounds per square foot	0.01602 6.944X10 ⁻³	feet of water. pounds per square inch.			
pounds per square inch	2.307 144	feet of water. pounds per square foot.			
quadrants (angle)	90 5400 1.571	degrees. minutes. radians.			

HOW TO DESIGN A MODERN LIGHTING SYSTEM

1. Analyze the Lighting Problem

Determine: 1) physical size and shape of the area; 2) architectural design and structural details; 3) occupancy, or end use, of the area; and 4) type and degree of severity of the seeing tasks which will exist.

2. Selected Needed Lighting Levels

Refer to chart "New Lighting Levels as Recommended by the Illuminating Engineering Society" or Fig. 9-53 in 3rd Edition of the IES Lighting Handbook.

3. Determine Desired Lighting Quality

Consider purpose for which lighting is to be used, visual environment which is desirable, methods of light control and distribution.

4. Select Proper Light Sources

Consider: 1) Efficiency (l/w); 2) total light output per lamp; 3) color (spectral) quality; 4) average rated life; 5) lumen depreciation throughout life; 6) heat produced by lamp; 7) effect of ambient temperature on light output and life; 8) light distribution control; 9) stroboscopic effect.

5. Select Appropriate Lighting System

Consider from standpoint of suitability for architectural design, general appearance, structural details, overall efficiency, ease of maintenance, method of mounting, light distribution.

6. Make a Lighting Calculation

Use appropriate method—see "Lighting Calculation Methods". Correct practice is to use the lumen method for interior lighting. Use "coefficient of utilizations" supplied by manufacturers of equipment being considered, or see Section 9 of 3rd Edition, IES Lighting Handbook.

7. Prepare a Lighting Layout

Fit the number of luminaires determined by Step 6 into the area involved in a logical and practical arrangement. (Steps 6 and 7 should be worked out simultaneously, on a "trial and error" basis.)

8. Provide Flexible Control of System

Use multiple switch control to individual multi-lamp units and multi-lamp areas, or a dimmer system for all lighting circuits.

9. Analyze Available Electrical Power

Select the most economical and appropriate electrical distribution system possible from the available electric power system.

10. Check Proposed Lighting System for Practicality

Verify all dimensions, double-check all calculations. Determine "watts/sq ft", check with normal practice. Determine impact of lighting load on air conditioning, analyze heat dissipation, check for interference with structural details and other system equipments, estimate and analyze first cost and operating cost.

HOW TO SELECT LUMINAIRES

Type of Light Source

Consider lumens per watt, size of lamps, color quality of light produced by the lamps, lamp life and replacement cost.

Type of Light Distribution

The type of lighting system and equipment layout selected will control the type of light distribution required for the luminaires or reflector equipment.

Initial Lumens Required

Light loss factors, spacing of outlets, and the desired lighting intensity maintained in service will establish light output in lumens required for each luminaire.

Overall Efficiency

Overall efficiency of luminaires varies from a high of approximately 90% downward. Consult manufacturers' light output and photometric data for luminaires under consideration.

Quality of Materials

Reflectors should have permanent type reflecting surface. Diffusing media should be durable, highly translucent, and should present an evenly lighted appearance. Gauge of metals should be adequate for necessary rigidity. Proper ventilation is important.

Ease of Maintenance

Luminaires should be easy to clean and relamp, with easily removable louvers, panels, etc. Ballasts should be readily accessible.

Appearance

Luminaires should present a good appearance and harmonize with interior and architectural treatment where used. Plain, simple lines are usually preferred.

Cost

Equipment cost is only part of the cost of good lighting. High first cost of equipment in a well designed lighting system may readily provide low cost lighting. Consider operating and maintenance costs; then select a low-cost "system".

LAYOUT REMINDERS

For the Lighting System Designer

- A customer buys a lighting system to provide an adequate, comfortable and appropriate lighting result-- not because he wants luminaires, lamps, conduit and wiring.
- Luminaires and lighting equipment selected should be appropriate for the structure and the seeing problems involved. Appearance, functional design, direct and reflected glare, shadows, maintenance, and lighting efficiency are all factors to be considered.
- The lighting layout should fit the structural details of the building. If plans and drawings are not available, survey the interior and note location of columns, beams, obstructions and other architectural features.
- Use conventional layouts with symmetrical spacing of units, if possible, with luminaires parallel and perpendicular to walls. Special geometrical patterns may be suitable in some cases but should be avoided generally unless they serve a specific functional or design purpose.
- Use continuous-row fluorescent luminaires in preference to individual units. The completed installation will look better and usually results in economies in wiring and installation.
- Recessed and built-in lighting equipment does not light the ceiling. Check your layout and room surface reflectances to see that use of such equipment will not produce uncomfortably dark ceilings nor excessive brightness ratios in the normal field of view.
- Efficiency of trans-lighted ceilings is dependent to a great extent on the reflectance of the plenum cavity. Be sure lamps can be mounted sufficiently high above diffusers or louvers to provide uniform brightness and spaced properly to provide desired intensity. Paint entire cavity white with highest possible reflectance.
- Suspended luminaires of the direct-indirect type often produce the best lighting result most economically. Check the suspension length carefully and limit it to the dimension which gives reasonably uniform ceiling brightness.
- Luminaire spacings should be used which produce uniform illumination and prevent undesirable shadows.
- Flexible lighting layouts which will permit more luminaires or lamps to be added later should be planned. This will permit an increase in lighting intensity without spoiling the symmetry or architectural harmony of the initial installation.
- Plan the maintenance program along with the lighting layout. Be sure that all luminaires and lighting equipment are easily accessible and are designed to be cleaned easily and quickly.
- Consider the finish and reflection factor of ceiling and side walls. Recommend proper colors and finishes to provide surrounding brightness conditions which promote eye comfort and good seeing conditions.
- Double check all calculations and details to insure the proper number of units and the ultimate desired lighting result.

LIGHTING CALCULATIONS METHODS

Type Lighting	Method of Calculation
General	Lumen Method Interflectance Method Zonal Lumen Method Point-by-Point Method
Supplementary	Point-by-Point Method Lumens-per-Foot Method
Floodlighting	Beam Lumens Method Point-by-Point Method
Street	Isocandle Curves

LIGHTING SYSTEM VOLTAGES

60 Cycle		High Frequency
Incandescent Filament Lamps	Electric Discharge Lamps	Fluorescent Lamps
28-32 110-125 220-240	110-125 200-216 220-240 240-280 440-480*	400** 600**
*Mercury lamp transformers. **Phase-to-phase voltage, with grounded neutral to provide less than 300 volts to ground (NEC).		

FORMULAS FOR GENERAL LIGHTING DESIGN

Lumen Method of Calculation

Average lumens reaching work plane = total initial lamp lumens \times CU \times MF

Average footcandles at work plane = $\frac{\text{total initial lamp lumens} \times \text{CU} \times \text{MF}}{\text{area of room in sq ft}}$

= total watts per sq ft \times overall lumens per watt \times CU \times MF

Area per lamp (sq ft) = $\frac{\text{initial lumens per lamp} \times \text{CU} \times \text{MF}}{\text{average footcandle level desired}}$

Area per luminaire (sq ft) = $\frac{\text{initial lumens per lamp} \times \text{no. of lamps per luminaire} \times \text{CU} \times \text{MF}}{\text{average footcandle level desired}}$

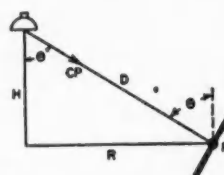
Total watts per sq ft = $\frac{\text{average footcandle level desired}}{\text{overall lumens per watt} \times \text{CU} \times \text{MF}}$

CU = Coefficient of Utilization
MF = Maintenance Factor

Point-by-Point Method of Calculation

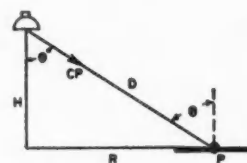
Illumination Normal to Light Ray:

$$E_n = \frac{CP}{D^2}$$



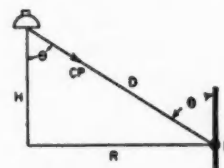
Horizontal Illumination:

$$E_h = \frac{CP}{D^2} \cos \theta = \frac{CP}{H^2} \cos^3 \theta = \frac{CP \times H}{D^3}$$



Vertical Illumination:

$$E_v = \frac{CP}{D^2} \sin \theta = \frac{CP}{H^2} \cos^2 \theta \sin \theta = \frac{CP \times R}{D^3}$$



- E_n = Illumination on plane normal to light ray (footcandles)
 E_h = Illumination on horizontal plane when light ray hits plane at angle θ (footcandles)
 E_v = Illumination on vertical plane when light ray hits plane at angle θ (footcandles)
 CP = Intensity of light source in direction of point P (candlepower)
 D = Distance from light source to point P (feet)
 H = Vertical mounting height of light source above plane of measurement (feet)
 R = Horizontal distance from light source to point P (feet)
 θ = Angle between light ray and a perpendicular line through light source (or a line perpendicular to horizontal plane through point P)

LIGHTING DESIGN AND LAYOUT DATA (continued)

ROOM RATIO FORMULAS	
Direct, Semi-Direct and General Diffuse Lighting:	
$\text{Room Ratio} = \frac{W \times L}{\text{Mounting height above work plane} \times (W+L)}$	
Semi-Indirect and Indirect Lighting:	
$\text{Room Ratio} = \frac{3 \times W \times L}{2 \times \text{ceiling height above work plane} \times (W+L)}$	
W = width of room	
L = length of room	

RELATION BETWEEN ROOM RATIO AND ROOM INDEX*		
Average Room Ratio	Range of Room Ratios	Room Index
5.0	4.5 up	A
4.0	3.5 to 4.5	B
3.0	2.75 to 3.5	C
2.5	2.25 to 2.75	D
2.0	1.75 to 2.25	E
1.5	1.38 to 1.75	F
1.25	1.12 to 1.38	G
1.00	0.9 to 1.12	H
0.8	0.7 to 0.9	I
0.6	Less than 0.7	J
*Room ratios are preferred because of their greater accuracy. Use this table for conversion of Coefficient of Utilization data based on room indexes.		

ROOM RATIOS								
Room Width & Length (ft)		Direct, Semi-Direct and General Diffuse Height of luminaire above floor (ft)						
		8	10	12	15	19	27	43
		Semi-Indirect and Indirect Approx. ceiling height above floor (ft)						
W	L	10½	13½	16½	21	27	39	63
10	10	0.9	0.7	0.5				
	14	1.1	0.8	0.6	0.5			
	18	1.2	0.9	0.7	0.5			
	24	1.3	0.9	0.7	0.6			
	30	1.4	1.0	0.8	0.6			
14	14	1.3	0.9	0.7	0.6			
	20	1.5	1.1	0.9	0.7	0.5		
	30	1.7	1.3	1.0	0.8	0.6		
	40	1.9	1.4	1.1	0.8	0.6		
	60	2.1	1.5	1.2	0.9	0.7	0.5	
18	20	1.7	1.3	1.0	0.8	0.6		
	30	2.0	1.5	1.2	0.9	0.7		
	40	2.3	1.6	1.3	1.0	0.8	0.5	
	60	2.5	1.8	1.4	1.1	0.8	0.6	
	80	2.7	2.0	1.5	1.2	0.9	0.6	
25	30	2.5	1.8	1.4	1.1	0.8	0.6	
	40	2.8	2.1	1.6	1.2	0.9	0.6	
	60	3.2	2.4	1.9	1.4	1.1	0.7	
	80	3.5	2.5	2.0	1.5	1.2	0.8	0.5
40	40	3.6	2.7	2.1	1.6	1.2	0.8	0.5
	60	4.4	3.2	2.5	1.9	1.5	1.0	0.6
	80	4.9	3.6	2.8	2.1	1.6	1.1	0.7
	100	5.2	3.8	3.0	2.3	1.7	1.2	0.7
60	60	5.5	4.0	3.2	2.4	1.8	1.2	0.8
	100	6.8	5.0	3.9	3.0	2.3	1.5	0.9
	140	7.6	5.6	4.4	3.4	2.6	1.7	1.0
80	80	7.3	5.3	4.2	3.2	2.4	1.6	1.0
	140		6.8	5.4	4.1	3.1	2.1	1.3
	200		7.6	6.0	4.6	3.5	2.3	1.4
100	100		6.7	5.3	4.0	3.0	2.0	1.2
	150			6.3	4.8	3.6	2.5	1.5
	200			7.0	5.3	4.0	2.7	1.6
120	120			6.3	4.8	3.6	2.5	1.5
	160			7.2	5.5	4.2	2.8	1.7
	200				6.0	4.5	3.1	1.9
RR = $\frac{W \times L}{H (W + L)}$		For Type D, SD and GD, H = distance from luminaire to work plane 30 in. from floor. For Type SI and I, H = distance from ceiling to work plane 30 in. from floor.						

LIGHTING DESIGN AND LAYOUT DATA (continued)

	TYPES OF LIGHTING SYSTEMS			
	ICI* Light Distribution	Type of Luminaires	Type of Mounting	Lighting System Classification
	Direct 90% to 100% Downward	Recessed	In Ceiling	Recessed (Inc. or Fl.)
		Individual Unit	On Ceiling	Surface Mounted Direct
		Continuous Row	On Ceiling	Suspended Direct
		Individual Unit	On Ceiling	Suspended Direct
		Luminous Architectural Elements	On Ceiling, Side Walls, or Columns	Architectural
		Decorative Ornamental	On Ceilings or Walls	Ornamental
		Large-Area Low-Brightness	Recessed in Ceiling	Luminous Element
	Semi-Direct 60% to 90% Downward	Diffuser Ceilings	From Ceilings	Translighted Ceiling
		Louver Ceilings	From Ceilings	Surface Mounted Semi-Direct
		Individual Unit	On Ceiling	Suspended Semi-Direct
	General Diffuse 40% to 60% Downward	Individual Unit	On Wall near Ceiling	Architectural
		Continuous Row	On Ceiling	Suspended
		Individual Unit	On Ceiling	Direct-Indirect
	Semi-Indirect 60% to 90% Upward	Continuous Row	On Ceiling	Suspended Semi-Indirect
		Luminous Cove Wall Bracket With Downward Component	On Wall	Semi-Indirect
		Luminous Ornamental	On Ceiling	Suspended Semi-Indirect
	Indirect 90% to 100% Upward	Individual Unit	On Ceiling	Suspended Indirect
		Continuous Row	On Ceiling	Suspended Indirect
		Wall Urns	On Wall	Indirect
		Cove	On Wall or In Ceiling	Cove Indirect
		Pedestal	Floor or Counter Top	Indirect**
		Ceiling Soffit**	In Ceiling	Indirect**

International Congress on Illumination approved classification of lighting systems according to a range of distribution of total light output upward or downward, in percentages as shown. A more detailed classification, as given here, has been found through practice to be more practical.

**According to ICI practice, soffit lighting might be classified as "direct". In actual practice, it is normally referred to as "indirect," since it is actually a form of cove lighting.

LUMINAIRE MOUNTING AND SPACING								
Mounting Height of Luminaire	COMMERCIAL						INDUSTRIAL	
	Direct	Semi-Direct		Semi-Indirect	Indirect		Spread	Concentrating
Ceiling Height for Indirect and Semi-Indirect Luminaires (feet)	Usual Spacing Between Units	Max. Spacing Between Units	Spacing* from Walls	Spacing Between Units	Spacing* from Walls	Length of Suspension	Maximum Spacing ¹ (ft.)	
8	7	7½	3	9	3	1-1½	Mounting Heights Above Floor	Spacing Between Units ²
9	8	8	3	9½	3	1-1½	15	12
10	9	9	3½	10½	3½	1½-2½	16	12
11	10	10½	3½	12	3½		18	12
12	10-12	12	4	14	4	2-3	20	12
13	10-12	13	4	15	4		22	12
14	10-13	15	5	17	5	3-4	24	12
15	10-13	17	5	19	5		26	12
16	10-13	19	6	21	6	4-5	28	12
18	10-20	21	6	23	6		30 or more	12
20 or more	18-24	24	7	26	7	4-6		12

*Spacings apply where desks or benches are next to wall, otherwise one-half the spacing between units is satisfactory.

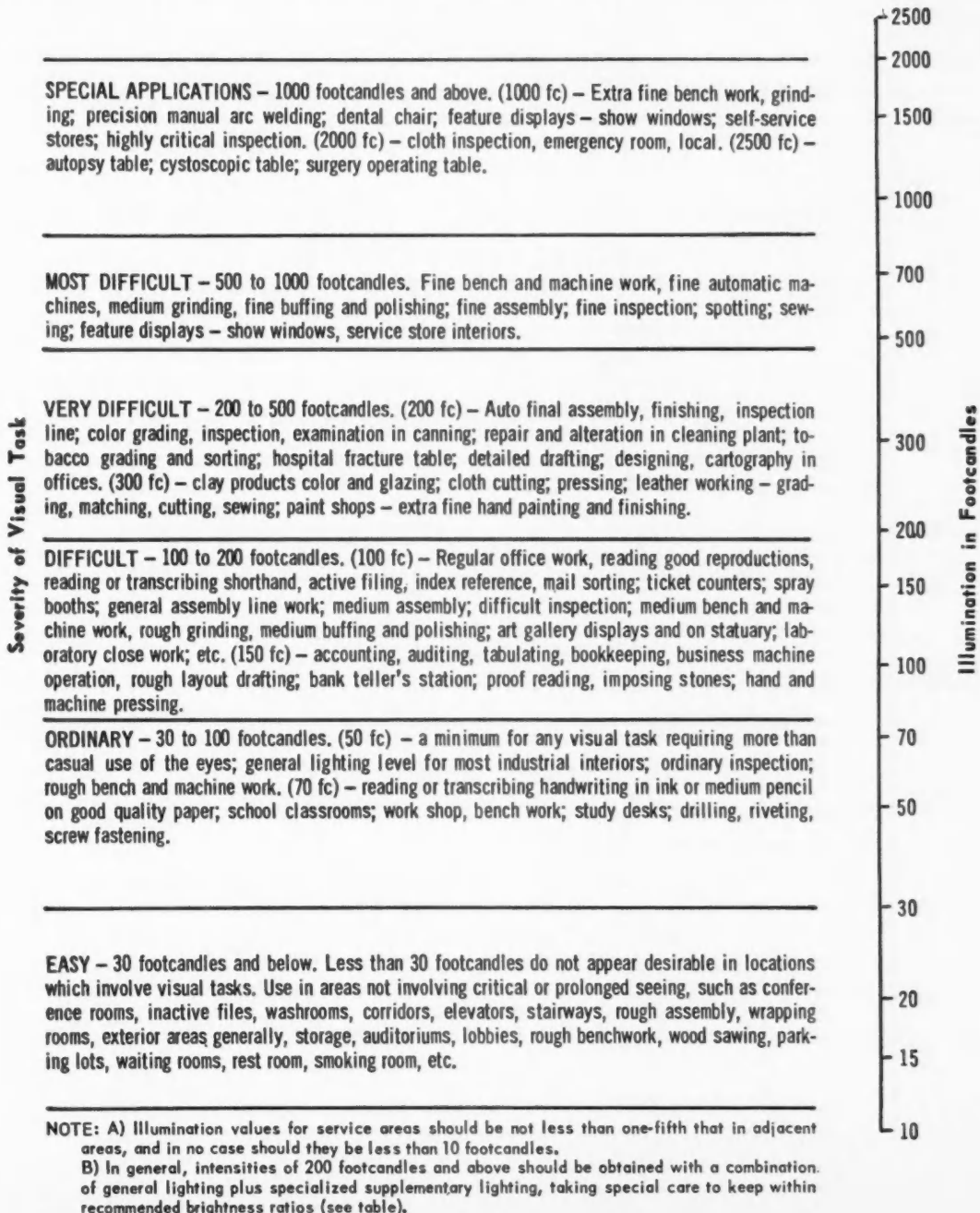
¹Units may have to be spaced closer to obtain desired illumination values.

²Where benches or machines are next to wall, spacing from wall should not exceed 1/3 spacing between units. Otherwise 1/2 unit spacing is suitable.

NEW LEVELS OF ILLUMINATION

Presented here is a condensed compilation of the new (1958) footcandle values recommended for specific visual tasks by the Illuminating Engineering Society and classified according to severity of the visual task. Note that these values apply to seeing tasks, and are not "average" values for general illumination on the

horizontal plane. Higher initial levels should be provided as required by maintenance conditions, and special luminaire arrangements should be used for visual tasks in a plane other than horizontal. For more detailed information, see Fig. 9-53 in the IES Lighting Handbook--3rd Edition.



**RECOMMENDED ILLUMINATION FOR
RESIDENCES (Footcandles)***

General Lighting	
Entrances, hallways, stairways, stair landings	10**
Living room, dining room, bedroom, family room, sun room, library, game or recreation room	10**
Kitchen, laundry, bathroom	30
Specific Visual Tasks	
Table games	30
Kitchen sink	70
Kitchen range and work surfaces	50
Laundry, trays, ironing board, ironer	50
Reading and writing, including studying	30
Books, magazines, newspapers	30
Handwriting, reproduction and poor copies	70
Desks, study	70
Reading music scores	30
Simple scores	30
Advanced scores	70
Sewing	
Dark fabrics (fine detail, low contrast)	200
Prolonged periods (light to medium fabrics)	100
Occasional periods (coarse thread, large stitches, high contrast thread to fabric)	30
Shaving, makeup, grooming; on the face at mirror locations	50

*Minimum on the visual task.

**General lighting for these areas need not be uniform.

**RECOMMENDED REFLECTANCE VALUES
FOR INDUSTRIAL AREAS**

Surface	Reflectance (%)
Ceiling	80
Wall	60
Desk and bench tops	35
Machines and equipment	25 to 30
Floors	not less than 15

Source: IES Lighting Handbook - 3rd Edition

**RECOMMENDED SURFACE REFLECTANCES
FOR OFFICES**

Surface	Reflectance Range (%)
Ceiling finishes	80 - 92
Walls	40 - 60
Furniture	26 - 44
Office machines and equipment	26 - 44
Floors	21 - 39

Source: IES Lighting Handbook - 3rd Edition

**RECOMMENDED BRIGHTNESS RATIOS
FOR INTERIOR LIGHTING**

Condition	Ratio
Between visual tasks and adjacent surroundings Example: White paper and desk top	1 to 1/3
Between visual tasks and more remote darker surfaces Example: White paper on desk & floor	1 to 1/10
Between visual tasks and more remote brighter surfaces Example: White paper on desk and luminaires	1 to 10
Between luminaires and adjacent surfaces in normal field of view	20 to 1
Anywhere within normal field of view Example: Luminaires and floor	40 to 1

These ratios are recommended as maximums: reductions are generally beneficial. See also Fig. 11-8 and Fig. 14-2 in IES Lighting Handbook - 3rd Edition

LIGHTING DESIGN AND LAYOUT DATA (continued)

RATED AVERAGE LIFE, FLUORESCENT LAMPS				
Type of Lamps	Burning Hours Per Start			
	3	6	12	Continuous*
T-8 and T-12 preheat, rapid start, high output; T-6, T-8 and T-12 slimline; T-12 instant start; T-17 preheat; All circlines	7500	Plus 25%	Plus 60%	Plus 150%
T-17 instant start; 6-, 8-, 13-watt T-5 preheat 14-watt T-12 preheat	6000			
Power Groove lamps	5000			
4-watt T-5	4000			
Cold cathode LP	15000	Life not affected by number of starts		
Cold cathode HP	25000			
*Light output depreciates steadily as lamps are burned. Where infrequent starting, or continuous burning are involved, lamps should be replaced before they reach average life, for maximum lighting value.				
Source: General Electric Co. Lamp Bulletin No. LS-101				

RATED AVERAGE LIFE, MERCURY VAPOR LAMPS	
Type Lamps	Rated Life (Hours)
PAR-38 bulb, 100-watt	2000 - 6000
PS-25 and BT-25 bulbs, 100-watt; PS-35 bulb, 125-watt; BT-28 bulb, 175-watt; BT-37 bulb, 430-watt; T-9½ bulb, 3,000-watt	6000
BT-28 bulb, 250-watt; T-16, BT-24, BT-37 R-52, R-57 bulbs, 400-watt; BT-56 bulb, 1000-watt	6000 - 7000
BT-37 bulb, 425-watt; BT-46 bulb, 700-watt	7000
R-57 bulb, 750-watt	8000
BT-56 bulb, 700-watt	9000
Burning hours shown are "economic life" under typical operating conditions. Actual burning hours may be up to 50% greater, depending on operating conditions.	
Source: Based on data shown in Fig. 8-90, IES Lighting Handbook - 3rd Edition.	

RATED AVERAGE LIFE, INCANDESCENT LAMPS	
Type Lamps	Rated Life (Hours)
General Service Lamps; sizes 75, 100, 150, 200, 300 watts, A and PS bulbs	750
General Service Lamps; sizes 300, 500, 750, 1000, 1500 watts, PS bulbs, mogul base	1000
Lumiline Lamps, 30, 40, 60 watts	1500
Reflector and Projector Lamps	2000
Extended Life, Special Service Lamps 25 to 1500 watts	2500
Source: Lamp manufacturers' bulletins.	

DATA ON TYPICAL FLUORESCENT BALLASTS (Used for General Lighting)				
Number and Type Lamp	Weight (lbs)	Line Current (amps)	Watts Consumed	
			By Ballast	Per Lamp*
For 60-cycle, 110-125 Volt Circuits				
2-20/T12	3 1/3	.42	9	24.5
2-30/T8	4	.70	17	38.5
2-40/T12	4	.85	18	49.0
2-40/T12/IS	9 1/3	.95	30	55.0
2-40/T12/RS	4	1.30	13	46.5
3-40/T12/RS	8	1.30	20	46.7
2-48T12	9 3/4	.95	30	53.0
2-72T12	2	1.40	29	69.5
2-96T12	13 3/4	1.60	34	91.0
2-48T12/HO	10	1.20	20	70.0
2-72T12/HO	12 1/2	1.70	30	100.0
2-96T12/HO	16	2.00	40	125.0
2-48PG17	15	2.60	41	128.5
2-72PG17	16	3.20	50	180.0
2-96PG17	16	4.00	55	227.5
For 60-cycle, 220-250 Volt Circuits				
2-40/T12	5 2/3	.43	20	50.0
2-90/T17	14 1/3	.93	31	105.5
2-40/T12/RS	4	.41	12	46.0
2-96T12	12	.80	29	88.5
2-96/T12/HO	13	1.10	54	132.0
For 60-cycle, 240-280 Volt Circuits				
2-40/T12	5 1/4	.37	18	49.0
2-90/T17	14 1/3	.83	31	105.5
2-48T12/HO	10	.56	30	55.0
2-48T12	5 3/4	.40	20	48.0
4-90/T17	16 1/2	1.65	36	99.0
For 60-cycle, 260-290 Volt Circuits				
2-40/T12	3 1/2	.19	10	45.0
2-40/T12/RS	4	.80	10	45.0
3-40/T12/RS	8	.55	20	46.7
2-96/T12/HO	15	.94	54	132.0
2-72T12	6	.62	25	67.5
2-96T12	6	.62	25	86.5
2-96PG17	12	1.85	75	237.5
*Lamp wattage plus proportional watts loss in ballast. Based on manufacturers' bulletins.				

LAMP SPECIFICATIONS

STANDARD FLUORESCENT LAMPS				
Lamp Designation:	Burnouts Per BLH*	Light Output**		Brightness (Foot-Lamberts)
		Initial Lumens	Initial L/W*	
Preheat Start Lamps (Starters Required)				
F20T12	134	1,030	51.5	1,600
F40CW**	48	2,800	70.0	2,100
F90T17	26	5,200	57.6	2,300
F40CW/3	43	3,100	77.5	2,350
Instant Start Lamps				
F40T12/IS	54	2,650	66.2	1,900
F40T17/IS	55	2,650	66.2	1,150
F48T12 Slimline	57	2,600	66.6	2,100
F72T12	37	4,100	73.2	2,100
F96T12 Slimline	26	5,600	75.6	2,100
Rapid Start Lamps (No Starters Required)				
F40CW**	48	2,800	70.0	—
F40CW/3	43	3,100	77.5	—
F48T12/HO	40	3,500	58.4	2,800
F72T12/HO	25	5,550	65.2	2,800
F96T12/HO	18	7,600	72.5	2,800
F48T12/1500	21	6,200	56.8	5,300
F72T12/1500	14	9,300	59.2	5,100
F96T12/1500	10	13,250	65.0	5,050
F48PG17	22	6,900	62.7	...
F72PG17	14	10,900	68.2	...
F96PG17	9	15,000	70.0	...

* Based on 7,500 hours average rated life, and lumen output of cool white lamps.

** All lumen values for cool white lamps.

* Lumens per watt, lamp watts only

** New 40-watt T12 lamp, interchangeable between preheat circuits and rapid start circuits.

*** Brightness varies. See manufacturers' literature for details.

Source: General Electric Co., Lamp Dept., and IES Lighting Handbook — 3rd Edition

COLD CATHODE FLUORESCENT LAMPS					
Lamp Designation	Lamp Current (ma)	Lamp Watts (HP)*	Light Output		Brightness (Foot-Lamberts)
			Initial Lumens	Initial L/W	
2545 (T-8)	120	28	1000	35.8	1100
	150	33	1200	32.5	1280
	200	40	1500	37.5	1600
2569 (T8)	120	37	1600	43.3	1210
	150	43	1850	43.0	1440
	200	52	2200	42.4	1650
2593 (T8)	120	46	2200	47.8	1250
	150	54	2600	48.2	1480
	200	65	3200	49.4	1700
Hairpin 6-in. Dia.	120	46	2200	47.8	1250
	150	54	2600	48.2	1480
	200	65	3200	49.4	1700

*High Pressure

Source: Based on data in Fig. 8-101, IES Lighting Handbook - 3rd Edition

STANDARD INCANDESCENT LAMPS					
Lamp Designation		Rated Life (Hours)	Burnouts Per BLH**	Light Output	
Watts	Bulb			Initial Lumens	Initial L/W
75	A-19	750	...	1,150	15.3
100	A-19*	750	...	1,700	17.0
150	A-23	750	...	2,700	18.0
200	PS-25	750	351	3,800	19.0
200	PS-30	750	360	3,720	18.6
300	PS-30	750	223	6,000	20.0
300	PS-35	1000	174	5,750	19.2
500	PS-40	1000	109	9,900	19.8
750	PS-52*	1000	60	16,700	22.3
1000	PS-52*	1000	44	23,000	23.0
1500	PS-52	1000	30	33,000	22.0
750	T-24	1000	70	14,200	19.0
1000	T-24	1000	50	20,000	20.0
500	R-52	2000	64	7,850	15.8
750	R-52	2000	39	12,700	17.0
1000	RB-52*	2000	28	18,000	18.0
550	R-57	2000	62	8,100	14.8
800	R-57	2000	37	13,500	16.9
1000	R-57	2000	31	16,300	16.3

* Coiled-coil filament axially mounted.
 ** Average lamp burnouts per billion lumen hours (calculated).
 Source: General Electric Co., Lamp Department, and IES Lighting Handbook — 3rd Edition.

STANDARD MERCURY VAPOR LAMPS						
Lamp Designation			Rated Life (Hours)	Burnouts Per BLH**	Initial Lumens	Initial L/W***
Watts	Bulb	ASA*				
100	PS-25	H4AC	6000	42	4,000	40.0
175	BT-28	H22KD	6000	23	7,200	41.1
250	BT-28	H5KF	6-7000	16-14	10,500	42.0
400	BT-24	H25DE	6-7000	11-9	15,500	38.7
400	BT-37	H1LB	6-7000	7-6	23,000	57.4
425	BT-37	H17LB	7000	7	20,000	47.5
430	BT-37	H24LB	6000	9	18,500	43.0
700	BT-46	H18NE	7000	3.6	40,000	57.2
700	BT-56	H15GW	9000	4.2	34,500	49.4
750	R-57	—	8000	5.5	22,500	30.0
1000	BT-56	H18GW	6-7000	3.2-2.8	51,800	51.8
1000	BT-56	H12GW	6-7000	2.9-2.5	58,000	58.0
3000	T-9½	H9FJ	6000	1.3	132,000	43.0

* New ASA designations have been adopted by all light source manufacturers.

** Average lamp burnouts per billion lumen hours (calculated), based on average rated life. Lamp life may be increased by as much as 50% under certain operating conditions.

*** Based on lamp watts only.

Source: Based on data given in Fig. 8-90, IES Lighting Handbook — 3rd Edition.

LIGHTING DESIGN AND LAYOUT DATA (continued)

REFLECTOR AND PROJECTOR LAMPS					
Bulb Types	Watts	Beam Spread (Degrees)*	Approx. Beam Lumens	Candle-power (10% Cone)**	Approx. Total Lumens
Reflector Spotlighting Lamps					
R-30	75	50	400	1,800	770
R-40	150	40	810	6,000	1,780
R-40	300	35	1,800	13,500	3,700
R-40	500	35	3,100	22,000	6,400
Reflector Floodlighting Lamps					
R-20	30	80	145	350	200
R-30	75	130	610	430	770
R-40	150	110	1,500	1,250	1,780
R-40	300	115	2,800	2,700	3,700
R-40	500	115	5,400	5,200	6,400
Projector Spotlighting Lamps					
PAR-38	75	30x30	480	4,000	750
PAR-38	150	30x30	1,100	10,500	1,730
PAR-46	200	17x23	1,200	32,000	2,350
PAR-56	300	15x20	1,800	70,000	3,650
PAR-64	500	13x20	3,000	110,000	6,000
Projector Floodlighting Lamps					
PAR-38	75	60x60	600	1,700	750
PAR-38	150	60x60	1,350	3,700	1,730
PAR-46	200	20x40	1,300	11,000	2,350
PAR-56	300	20x35	2,000	22,000	3,650
PAR-56	300	30x60	2,100	10,000	3,650
PAR-64	500	20x35	3,400	35,000	6,000
PAR-64	500	35x65	3,500	12,000	6,000

*Measured to 10% of maximum candlepower
 **Average initial CP in 10° zone
 Source: G.E. Co. Lamp Bulletin LS-152, Feb. 1959

COMPARATIVE STROBOSCOPIC EFFECT OF VARIOUS LIGHT SOURCES Operated on 60-Cycle Supply		
Lamp Type	Method of Operation	Relative Stroboscopic Effect
Incandescent		
200-watt		1
40-watt		7
Fluorescent		
Green	Single-lamp ballast	11
Blue	Single-Lamp ballast	49
White	Single-lamp ballast	19
White	2-lamp ballast	9
White	Single-lamp ballast on each phase of 3-phase circuit (3 lamps)	3
White	3 lamps: 1 on single-lamp ballast, 2 on 2-lamp ballast	14

Also see Figs. 8-48 and 8-49 in IES Lighting Handbook 3rd Edition
 Source: Westinghouse Lighting Handbook (1956)

COLOR TEMPERATURE OF VARIOUS LIGHT SOURCES	
Light Source	Degrees K*
Natural Daylight	
Light from clear blue sky	12,000-27,000
Light from hazy or smoky sky	7,500-8,400
Light from totally overcast sky	6800
Sunlight, plus light from clear sky (noon)	6500
Direct sunlight (noon in midsummer)	5800
Light from heated sources**	
"Daylight" fluorescent lamps**	6500
Blue (daylight) photoflash lamps	6300
Cool white fluorescent lamps**	4500
Clear photoflash lamps	3800
White (standard) fluorescent lamps**	3500
Photoflood lamps	3400
500-watt projection lamp	3175
1000-watt standard incandescent lamp	3000
500-watt standard incandescent lamp	2950
60-watt standard incandescent lamp	2800

*Absolute temperature scale having its zero at -273°C (-459.4°F).
 **By definition, color temperature applies only to light generated by heat (same color as a black body at that temperature), but fluorescent lamps have been arbitrarily color-designated in degrees Kelvin for purposes of simplicity.

FLUORESCENT LAMP LUMEN OUTPUT RATIOS (Standard Cool White = 100)	
Color of lamps	Multiplying Factor
Deluxe Cool White (CW/X)	0.71
Deluxe Warm White (WW/X)	0.71
Daylight (D)	0.93
Soft White (SW)	0.68
Green (G)	1.20
Gold (GO)	0.60
Blue or Pink (B or PK)	0.45
Red (R)	0.06

INTERCHANGEABILITY OF FLUORESCENT LAMPS 40-watt T-12 Bipin			
Lamp Type	Ballast Type		
	Preheat	Instant Start	Rapid Start
Preheat	O.K.	Not Recommended	Will Not Start
Instant	Will Not Start	O.K.	Will Not Start
Rapid Start	O.K.	Not Recommended	O.K.

Source: IES Lighting Handbook - 3rd Edition.

LIGHTING DESIGN AND LAYOUT DATA (continued)

LOAD AND OUTPUT OF TYPICAL FLUORESCENT LUMINAIRES									
Fluorescent Lamps				1-Lamp Luminaire			2-Lamp Luminaire*		
Type Lamp	Length (ins)	Lamp Watts	Lamp Current (ma)	Lumens	Total Watts	L/W	Lumens	Total Watts	L/W
40T12	48	39.6	430	2,650	50.6	52.4	5300	97.2	54.5
40T12	48	—	—	2,800	—	—	5600	—	—
40T12/1S	48	40.6	425	2,500	60.0	41.6	5000	100.0	50.0
40T12/RS	48	39.6	430	2,650	52.0	51.0	5300	92.0	57.6
40CW/3	48	—	—	3,100	—	—	6200	—	—
48T12	48	38.5	428	2,360	—	—	4720	107.0	44.1
48T12	48	38.5	426	2,360	—	—	4720	● 97.0	48.6
48T12/RS	48	60.0	800	3,350	90.0	37.2	6700	140.0	47.9
48T12/RS	48	109.0	1500	6,200	—	—	12,400	250.0	49.6
48PG17	48	107.0	1500	6,000	—	—	12,000	255.0	47.1
40T17/1S	60	42.5	420	2,500	62.5	40.0	5000	105.0	47.6
90T17	60	90.0	1550	5,200	111.0	46.9	10,400	211.0	49.3
72T12	72	56.0	425	3,600	—	—	7,200	146.0	49.3
72T12	72	56.0	425	3,600	—	—	7,200	● 137.0	52.5
72T12/RS	72	80.5	800	5,250	125.0	42.0	10,500	200.0	52.5
72T12/RS	72	157.0	1500	9,300	—	—	18,600	390.0	47.7
72PG17	72	155.0	1500	9,300	—	—	18,600	360.0	51.6
96T12	96	73.5	425	5,100	—	—	10,200	181.0	56.4
96T12	96	73.5	425	5,100	—	—	10,200	● 175.0	58.2
96T12/RS	96	105.0	800	7,300	135.0	54.1	14,600	254.0	57.5
96T12/RS	96	204.0	1500	13,250	—	—	26,500	480.0	55.2
96PG17	96	215.0	1500	15,000	—	—	30,000	485.0	61.9

*Using HPF lead-lag ballasts and standard cool white lamps. For lumen output using other color lamps, use the multiplying factors given in table "Fluorescent Lamp Lumen Output Ratios"

● Based on use of 2-lamp series ballasts.

Source: Computed based on data in Figs. 8-98, 8-99, 8-100 and 8-103 of IES Lighting Handbook — 3rd Edition, and General Electric Co. Bulletin LS-101, July, 1958.

FLUORESCENT LAMP COLOR GUIDE				
Application	Deluxe		Standard	
	Warm	Cool	Warm	Cool
Groceries	—	Good	—	Fair
Meat Markets	—	Good	—	Fair
Bakeries	Good	Fair	—	—
Confectionery	Good	Fair	—	—
Restaurants	Good	—	—	—
Tea Rooms	Good	—	—	—
Taverns	Good	—	Fair	—
Men's Wear	Fair	Good	—	Fair
Women's Wear	Good	—	Fair	—
Children's Wear	Good	—	Fair	—
Shoe Store	Good	—	Fair	—
Barber & Beauty*	Good*	Fair	—	—
Drug Stores	—	Good	—	Fair
Florist	Fair	Good	—	—
Jewelry	—	Good	—	Fair
Home Furnishings	Good	Fair	—	—
Variety	—	Good	—	Fair
Schools	—	—	—	Good
Offices	—	—	Good	Fair

*Except for tinting

Source: Lighting Products Inc.

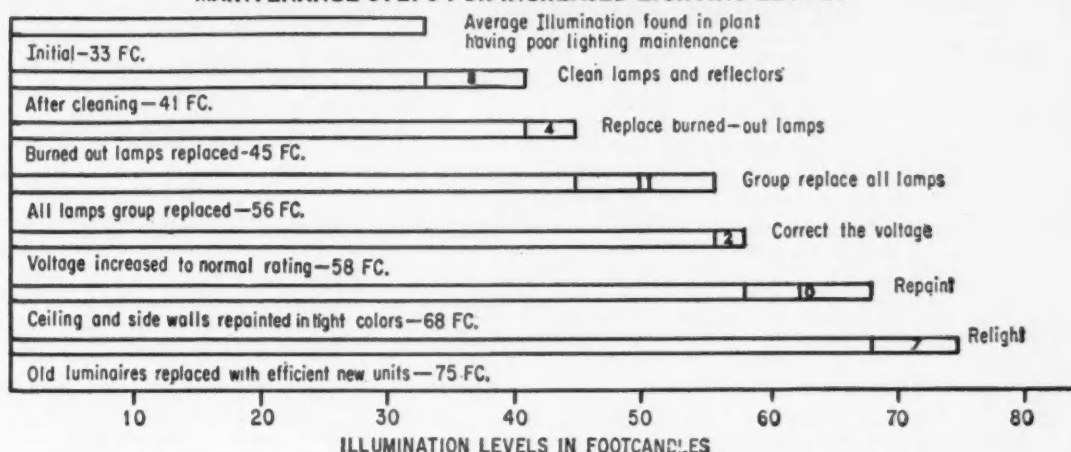
EFFICIENCY OF PRODUCTION OF COLORED LIGHT		
Color	Approx. Lumens per Watt	
	Fluorescent	Filament*
Blue	20 to 26	0.5 to 1.5
Green	55 to 75	0.5 to 3
Yellow	22 to 31	5 to 10
Red	3 to 5	1 to 14

*Based on 100-watt lamp with typical color filters of various kinds; colored bulbs, glass roundels and caps, gelatins, dyes and lacquers.

Source: Westinghouse Lighting Handbook - 1956.

LIGHTING DESIGN AND LAYOUT DATA (continued)

MAINTENANCE STEPS FOR INCREASED LIGHTING LEVELS



Lighting maintenance is a highly important factor in lighting system design. The above chart illustrates its effectiveness on a typical lighting installation. Increased reflectances, improved brightness ratios, and higher lighting levels may be effected through simple maintenance procedures.

Select luminaires and lighting equipment which include easy maintenance features designed and built into the units by the lighting equipment manufacturers; and provide easy access to all luminaires and lighting equipment.

MAJOR CAUSES OF LIGHT LOSS In Lighting Systems

Cause of Depreciation	Percent Loss
Lamp Depreciation (End of rated life)	
Incandescent	20
Fluorescent	30
Mercury Vapor	23
Circuit Voltage Depreciation	
With adequate wiring	Negligible
With poor wiring and overloading of circuits	5-20
Luminaire Light Absorption	18-35
Paint Depreciation	
Absorption of light by walls, ceilings, floors and other surfaces	5 (per year)
Dirt and Dust Depreciation	
1-month cleaning intervals	10
3-month cleaning intervals	15
6-month cleaning intervals	20
Cleaned when lamps burn out	30
Lamp Outage Depreciation	Up to 12

TYPES OF MAINTENANCE EQUIPMENT Used for Lighting Servicing

Equipment	Mounting Height (Feet)			
	To 12	12-18	18-30	Over 30
Catwalk (Or Truss)			X	X
Crane (Where Available)			X	X
Crows-Nest Ladder			X	
Disconnecting Hanger		X	X	X
Portable Maintenance Platform		X	X	
Relamping Bridge			X	X
Step Ladder	X			
Straight Ladder		X		
Telescoping Platform Tower		X	X	

LIGHT SOURCE EFFICIENCIES

Source	Approx Lumens per Watt*
Candle (luminous efficiency equivalent)	0.1
Oil lamp (luminous efficiency equivalent)	0.3
Original incandescent lamp (1879)	1.4
60-watt carbon filament lamp (1905)	4.0
60-watt coiled coil tungsten filament lamp (1954)	13.9
1000-watt general service lamp (1959)	23.0
No. 1 photoflood lamp (1959)	34.4
1000-watt Type H12KP (ASA) mercury vapor lamp (1958)	58.0
40-watt cool white fluorescent lamp, lamp only (1959)	77.5

*Initial value, lamp only

LIGHTING DESIGN AND LAYOUT DATA (continued)

COEFFICIENTS OF UTILIZATION FOR TYPICAL LUMINAIRES						
Luminaire Type	Distribution and Maximum Spacing	Ceiling Walls Room Ratio	80%		50%	
			50%	30%	50%	10%
			Coefficients of Utilization			
Direct Lighting						
1-Lamp Aluminum Troffer Baffled	0% Up 60% Down 0.8 x MH	1.0 1.5 2.5 4.0	.43 .50 .55 .59	.40 .47 .53 .57	.42 .49 .54 .56	.37 .44 .50 .54
3-Lamp 24" Troffer Diffusing Plastic	0% Up 60% Down 0.9 x MH	1.0 1.5 2.5 4.0	.37 .45 .52 .56	.31 .40 .48 .54	.35 .43 .49 .54	.27 .35 .43 .50
Mercury Aluminum High Bay	0% Up 70% Down 0.9 x MH	1.0 1.5 2.5 4.0	.48 .57 .64 .68	.45 .53 .61 .66	.47 .55 .62 .66	.42 .50 .58 .63
Mercury Porcelain High Bay Ventilated	0% Up 75% Down 1.0 x MH	1.0 1.5 2.5 4.0	.50 .59 .67 .74	.46 .55 .64 .70	.49 .58 .66 .71	.42 .52 .61 .67
Mercury Prismatic High Bay	0% Up 70% Down 0.6 x MH	1.0 1.5 2.5 4.0	.67 .73 .78 .81	.63 .70 .75 .79	.64 .69 .74 .76	.60 .65 .70 .74
Semi-Direct Lighting						
4-Lamp Enclosed Diffusing Plastic	10% Up 50% Down 1.0 x MH	1.0 1.5 2.5 4.0	.27 .34 .40 .45	.23 .30 .37 .41	.25 .30 .36 .40	.19 .25 .32 .36
2-Lamp Porcelain Industrial Reflector	10% Up 70% Down 1.0 x MH	1.0 1.5 2.5 4.0	.47 .60 .71 .78	.41 .54 .65 .74	.45 .56 .66 .73	.36 .48 .59 .67
2-Lamp Bare Lamp Channel	10% Up 80% Down 1.0 x MH	1.0 1.5 2.5 4.0	.46 .58 .69 .77	.38 .51 .63 .72	.42 .53 .64 .71	.33 .44 .55 .64
Direct - Indirect Lighting						
Multilamp Metal Panels and Louvers	30% Up 35% Down 1.1 x MH	1.0 1.5 2.5 4.0	.31 .37 .44 .50	.27 .33 .41 .47	.28 .32 .39 .42	.22 .27 .34 .39
2-Lamp Metal Sides Louver Shielding	45% Up 35% Down 1.2 x MH	1.0 1.5 2.5 4.0	.37 .46 .57 .63	.30 .40 .51 .59	.32 .38 .47 .51	.24 .31 .40 .45

LIGHTING DESIGN AND LAYOUT DATA (continued)

COEFFICIENTS OF UTILIZATION FOR TYPICAL LUMINAIRES						
Luminaire Type	Distribution and Maximum Spacing	Ceiling Walls Room Ratio	80%		50%	
			50%	30%	50%	10%
			Coefficients of Utilization			
Semi-Indirect Lighting						
4-Lamp Translucent Sides and Bottom	60% Up	1.0	.26	.20	.19	.12
	15% Down	1.5	.36	.30	.25	.18
	1.2 x MH	2.5	.46	.40	.32	.25
		4.0	.54	.50	.37	.32
Fluorescent Grid Luminous Indirect	65% Up	1.0	.27	.21	.20	.13
	10% Down	1.5	.37	.30	.26	.19
	1.2 x MH	2.5	.48	.42	.33	.26
		4.0	.56	.51	.38	.33
Indirect Lighting						
Luminous Indirect Fluorescent	65% Up	1.0	.19	.14	.13	.07
	5% Down	1.5	.26	.20	.18	.12
	1.2 x MH	2.5	.35	.30	.24	.18
		4.0	.39	.37	.27	.23
Silvered Bowl Indirect	85% Up	1.0	.24	.16	.17	.08
	0% Down	1.5	.35	.26	.23	.13
	1.2 x MH	2.5	.48	.40	.29	.21
		4.0	.57	.52	.36	.29
Fluorescent Cove Without Reflector	Cove	1.0	.18	.15	.10	.07
	12" to 18"	1.5	.25	.21	.15	.11
	Below	2.5	.33	.30	.20	.17
	Ceiling	4.0	.36	.34	.22	.20
Luminous Ceiling Lighting						
Extended area system using diffusing glass or plastic. Ceiling cavity reflectance 75%		1.0	.31	.26	—	—
		1.5	.40	.35	—	—
		2.5	.49	.46	—	—
		4.0	.56	.54	—	—
Extended area system using opaque white louvers. Ceiling cavity reflectance 75%		1.0	.25	.22	—	—
		1.5	.30	.26	—	—
		2.5	.33	.31	—	—
		4.0	.35	.34	—	—
* Above CU values are based on floor of 10% reflectance. Increase all CU values by percentages shown below for floors having 30% reflectance.						
Percentage increase for floors having 30% reflectance as compared with 10% reflectance		1.0	5%	3%	4%	1%
		1.5	7%	6%	5%	2%
		2.5	10%	8%	7%	4%
		4.0	14%	12%	8%	6%
NOTE: Coefficients of Utilization shown above here were condensed from Fig. 9-3, IES Lighting Handbook — 3rd Edition, covering popular types of luminaires only. CU values are shown for four room ratios only (1.0, 1.5, 2.5 and 4.0). Interpolate for other room ratios, or refer to manufacturers' complete CU data for specific luminaires when greater accuracy is required.						

ELECTRIC SPACE HEATING DATA

HEAT LOSS FACTORS

To adjust these factors for insulation,
see Figs. 16—20.

FIG. 1. FRAME FLOORS (Heat flow down)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Type of ceiling below joists*	Type of floor above joists Wood subfloor (25/32 in.) and felt plus			
	Cement (1½ in.) and ceramic tile (½ in.)	Hard- wood floor (¾ in.)	Plywood (¾ in.) and floor tile or linoleum (¾ in.)	Insulating board (¾ in.) and hardboard (¼ in.) and floor tile or linoleum (¾ in.)
No ceiling below; bottom of joists exposed to basement or crawl space.....	.091	.082	.079	.072
Metal lath and plaster (¾ in.).....	.064	.060	.058	.054
Gypsum board (¾ in.).....	.061	.057	.056	.052
Wood lath and plaster.....	.060	.056	.055	.051
Gypsum lath (¾ in.) and plaster.....	.060	.056	.055	.051
Insulating board (½ in.).....	.050	.047	.046	.043
Insulating board lath (½ in.) and plaster..	.049	.046	.045	.043
Acoustical tile (¾ in.) on wood furring....	.047	.045	.044	.041
Acoustical tile (¾ in.) on gypsum board (¾ in.).....	.045	.042	.041	.039

* Plaster assumed of sand-aggregate, ½-in. thick, unless otherwise specified.

FIG. 2. CONCRETE FLOORS (Heat flow down)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Concrete deck (inches)	Type of finish floor above slab	No finish ceiling; bare concrete slab	Ceiling applied directly to concrete slab		Ceiling suspended below slab							
			Plaster ($\frac{1}{8}$ in.)	Acoustical tile		Gypsum board ($\frac{3}{8}$ in.)		Metal lath and plaster ($\frac{3}{8}$ in.)	Acoustical tile			
				$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	With- out plaster	With plaster ($\frac{3}{4}$ in.)		On furring or channels		On gypsum board ($\frac{3}{8}$ in.)	
									$\frac{1}{2}$ in.	$\frac{3}{4}$ in.	$\frac{1}{2}$ in.	$\frac{3}{4}$ in.
4 to 6	Bare slab; no finish floor above . . . . .	.131	.130	.086	.073	.077	.075	.081	.064	.056	.059	.053
	Floor tile or linoleum ($\frac{1}{8}$ in.) or ceramic tile on terrazzo (1 in.) . . . . .	.128	.127	.085	.072	.076	.075	.080	.062	.054	.058	.052
	Wood block (13/16 in.) . . . . .	.098	.098	.071	.062	.065	.064	.068	.054	.049	.051	.047
	Wood subfloor (25/32 in.), felt and hard- wood ($\frac{3}{4}$ in.) on sleepers . . . . .	.061	.061	.049	.045	.046	.045	.048	.041	.038	.039	.036
8 to 10	Bare slab; no finish floor above . . . . .	.115	.114	.079	.068	.071	.070	.075	.058	.053	.056	.050
	Floor tile or linoleum ($\frac{1}{8}$ in.) or ceramic tile on terrazzo (1 in.) . . . . .	.113	.112	.078	.067	.071	.069	.074	.058	.052	.055	.050
	Wood block (13/16 in.) . . . . .	.089	.089	.066	.058	.061	.059	.063	.051	.048	.049	.044
	Wood subfloor (25/32 in.), felt and hard- wood ($\frac{3}{4}$ in.) on sleepers . . . . .	.057	.057	.047	.043	.044	.043	.045	.039	.036	.037	.035

FIG. 3. CONCRETE CEILINGS (Heat flow up)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Concrete deck (inches)	Type of finish floor above slab	No finish ceiling; bare concrete slab	Ceiling applied directly to concrete slab		Ceiling suspended below slab							
					Gypsum board (¾ in.)		Metal lath and plaster (¾ in.)	Acoustical tile				
			Plaster (½ in.)	Acoustical tile		With- out plaster		With plaster (¾ in.)	On furring or channels		On gypsum board (¾ in.)	
				½ in.	¾ in.				½ in.	¾ in.	½ in.	¾ in.
4 to 6	Bare slab; no finish floor above . . . . .	.181	.179	.104	.086	.105	.102	.113	.082	.069	.074	.064
	Floor tile or linoleum (½ in.) or ceramic tile on terrazzo (1 in.) . . . . .	.175	.173	.102	.085	.103	.100	.110	.079	.068	.073	.064
	Wood block (13/16 in.) . . . . .	.124	.123	.083	.071	.083	.081	.088	.067	.059	.062	.055
	Wood subfloor (25/32 in.), felt and hard- wood (¾ in.) on sleepers. . . . .	.070	.070	.056	.049	.055	.053	.057	.047	.043	.045	.041
8 to 10	Bare slab; no finish floor above . . . . .	.151	.149	.094	.079	.094	.092	.100	.074	.064	.068	.060
	Floor tile or linoleum (½ in.) or ceramic tile on terrazzo (1 in.) . . . . .	.147	.146	.092	.078	.093	.090	.099	.073	.064	.067	.060
	Wood block (13/16 in.) . . . . .	.109	.108	.076	.066	.076	.074	.080	.062	.057	.058	.052
	Wood subfloor (25/32 in.), felt and hard- wood (¾ in.) on sleepers. . . . .	.065	.065	.052	.047	.052	.051	.054	.045	.041	.043	.039

ELECTRIC SPACE HEATING DATA (continued)

FIG. 4. MASONRY WALLS (Heat flow outward)
TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Interior finish*	Exterior finish																	
	Face brick (4 in.) or stone (4 in.) or precast concrete (4 to 6 in.) plus									Common brick (4 in.) or precast concrete (8 in.) plus								
	Concrete block backing			Hollow clay tile backing			Concrete backing			Concrete block backing			Hollow clay tile backing			Concrete backing		
	Thickness of backing (inches)									Thickness of backing (inches)								
	4	8	12	4	8	12	4	8	12	4	8	12	4	8	12	4	8	12
Bare masonry wall; no interior finish.....	.143	.120	.112	.120	.092	.077	.177	.161	.148	.123	.106	.100	.106	.084	.071	.147	.137	.127
Plaster (½ in.) applied directly to masonry.....	.136	.115	.108	.115	.089	.075	.166	.152	.140	.117	.102	.096	.102	.081	.069	.140	.130	.121
Metal lath and plaster (¾ in.) on furring.....	.093	.083	.079	.083	.069	.060	.106	.100	.096	.084	.076	.073	.076	.064	.056	.095	.091	.086
Gypsum lath (¾ in.) on furring.. Wood lath or gypsum lath (¾ in.) and plaster on furring.....	.088	.079	.075	.079	.066	.058	.100	.095	.090	.080	.072	.070	.072	.061	.054	.090	.086	.082
Insulating board lath (½ in.) and plaster on furring.....	.086	.077	.074	.077	.065	.057	.097	.092	.088	.078	.071	.068	.071	.060	.053	.087	.083	.080
	.065	.060	.058	.060	.052	.047	.071	.068	.066	.061	.056	.054	.056	.049	.044	.066	.064	.062

FIG. 5. FRAME CEILINGS (Heat flow up)
TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Type of ceiling below joists*	No floor above. Top of joists exposed to ventilated attic space	Type of floor above joists				
		Wood subfloor only (25/32 in.)	Wood subfloor (25/32 in.) and felt plus			
			Cement (1 1/2 in.) and ceramic tile (1/2 in.)	Hardwood floor (3/4 in.)	Plywood (3/4 in.) and floor tile or linoleum (1/2 in.)	Insulating board (3/4 in.) and hardboard (1/4 in.) and floor tile or linoleum (1/2 in.)
Metal lath and plaster (3/4 in.).....	.217	.092	.082	.075	.072	.066
Gypsum board (3/4 in.).....	.190	.087	.078	.071	.069	.063
Wood lath and plaster.....	.181	.085	.076	.070	.068	.062
Gypsum lath (3/4 in.) and plaster.....	.180	.085	.076	.070	.068	.062
Insulating board (1/2 in.).....	.111	.065	.060	.056	.055	.051
Insulating board lath (1/2 in.) and plaster.....	.107	.064	.059	.055	.054	.050
Acoustical tile (3/4 in.) on furring.....	.098	.061	.056	.053	.051	.048
Acoustical tile (3/4 in.) on gypsum board (3/4 in.).....	.088	.057	.053	.050	.049	.046

FIG. 6. FRAME WALLS (Heat flow outward)
TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Interior finish*	Exterior finish**														
	Wood siding, wood shingles, or wood panels					Wood shingles with insulated backer board or asphalt insulating siding					Brick veneer or plywood (¾ in.)				
	Sheathing					Sheathing					Sheathing				
	Ply- wood	Gyp- sum board	Wood	Insulating board		Ply- wood	Gyp- sum board	Wood	Insulating board		Ply- wood	Gyp- sum board	Wood	Insulating board	
				½ in.	1 in.				½ in.	1 in.				½ in.	1 in.
Metal lath and plaster (¾ in.).....	.092	.091	.077	.072	.061	.081	.080	.069	.065	.056	.105	.103	.086	.079	.066
Gypsum board (¾ in.) or plywood (¼ in.).....	.087	.086	.073	.069	.059	.075	.074	.064	.061	.053	.099	.097	.081	.076	.064
Wood lath or gypsum lath (¾ in.) and plaster.....	.085	.084	.072	.067	.058	.073	.072	.063	.059	.052	.096	.094	.079	.074	.062
Wood panels (¾ in.).....	.074	.073	.063	.060	.052	.065	.064	.057	.054	.047	.082	.080	.069	.065	.056
Insulating board lath (½ in.) and plaster.....	.064	.064	.056	.054	.047	.057	.057	.051	.049	.043	.071	.070	.061	.058	.050

* Plaster assumed of sand-aggregate, 1/2-in. thick, unless otherwise specified.

** Sheathing details: Gypsum 5/8"; Plywood 5/16"; Wood 25/32" plus building paper; Insulating Board 25/32". Furring strips 1" thick are assumed between wood shingles and gypsum, plywood and insulating board.

FIG. 7. HEAT LOSS CONVERSION TABLE

HEAT
LOSS
FACTORS

Btu per hr	Watts	Btu per hr	Watts	Btu per hr	Watts	Btu per hr	Watts	Btu per hr	Watts
.01	.0029	.21	.062	.41	.120	.61	.179	.81	.237
.02	.0059	.22	.064	.42	.123	.62	.182	.82	.240
.03	.0088	.23	.067	.43	.126	.63	.185	.83	.243
.04	.0117	.24	.070	.44	.129	.64	.188	.84	.246
.05	.0146	.25	.073	.45	.132	.65	.190	.85	.249
.06	.0176	.26	.076	.46	.135	.66	.193	.86	.252
.07	.0205	.27	.079	.47	.138	.67	.196	.87	.255
.08	.0234	.28	.082	.48	.141	.68	.199	.88	.258
.09	.0264	.29	.085	.49	.144	.69	.202	.89	.261
.10	.029	.30	.088	.50	.146	.70	.205	.90	.264
.11	.032	.31	.091	.51	.149	.71	.208	.91	.267
.12	.035	.32	.094	.52	.152	.72	.211	.92	.270
.13	.038	.33	.097	.53	.155	.73	.214	.93	.272
.14	.041	.34	.100	.54	.158	.74	.217	.94	.275
.15	.044	.35	.103	.55	.161	.75	.220	.95	.278
.16	.047	.36	.105	.56	.164	.76	.223	.96	.281
.17	.050	.37	.108	.57	.167	.77	.226	.97	.284
.18	.053	.38	.111	.58	.170	.78	.229	.98	.287
.19	.056	.39	.114	.59	.173	.79	.231	.99	.290
.20	.059	.40	.117	.60	.176	.80	.234	1.00	.293

FIG. 8. INFILTRATION

(Watts per cu ft per deg F temp diff)

1/2 air change per hr	1 air change per hr	2 air changes per hr
.0027	.0053	.0106

FIG. 9. HOLLOW GLASS BLOCKS

(Heat flow horizontal)

TRANSMISSION HEAT LOSS (watts per sq ft per deg F temp diff)

Nominal size (inches)	Undivided cavity	With glass fiber dividing cavity
6 x 6 x 4 thick	.176	—
8 x 8 x 4 thick	.165	.141
12 x 12 x 4 thick	.153	.129

FIG. 10. CONCRETE FLOOR SLABS*

(Unheated)

TRANSMISSION HEAT LOSS (Watts per ft of exposed edge)

Outdoor design temperature (deg F)	Edge insulation thickness (inches)**	
	1	2
-20 to -30	16	14.5
-10 to -20	14.5	13
0 to -10	13.5	12

* At or near grade level

** Insulation should extend 24 in. horizontally under slabs; or 24 in. down along the foundation wall below slab level.

FIG. 11. BASEMENT WALLS AND FLOORS

(Below grade)*

TRANSMISSION HEAT LOSS** (Watts per sq ft)

Ground water temperature (deg F)	Walls	Floors
40	1.76	0.88
50	1.17	0.59
60	0.59	0.29

* Representative concrete or concrete block construction

** Based on 70F indoor design temperature

ELECTRIC SPACE HEATING DATA (continued)

FIG. 12.
BASEMENT WALLS
(Above grade)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Wall thickness (in.)	Concrete (sand aggregate)	Concrete block (Three oval core)	
		Cinder aggregate	Sand and gravel aggregate
8	.197	.114	.150
10	.178	—	—
12	.162	.107	.138

FIG. 13.
SKYLIGHTS
(Heat flow up)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Type of sash	Single glass	Two sheets of glass		
		¼-in. air space	½-in. air space	1-in. or more air space
Large sheets of glass; no sash	.410	.205	.194	.185
Wood*	.370	.185	.174	.160
Steel*	.410	.206	.194	.185
Aluminum*	.451	.226	.212	.203

* 80% glass, 20% sash.

FIG. 14.
WINDOWS
(Heat flow horizontal)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Type of sash	Single glass	Unit-type double glazing**		Single glass with storm sash	
		¼-in. air space	½-in. air space	½-in. air space	1-in. or more air space
Large sheets; no sash	.331	.179	.161	.161	.155
Wood*	.299	.161	.153	.147	.141
Steel*	.331	.179	.194	.161	.155
Aluminum*	.365	.197	.210	.179	.170

* Windows assumed 80% glass, 20% sash

** Sealed units; two panes in same opening

FIG. 15.
SOLID WOOD DOORS
(Heat flow outward)

TRANSMISSION HEAT LOSS (Watts per sq ft per deg F temp diff)

Door thickness (in.)		Exposed door	With glass storm door
Nominal	Actual		
Thin panel*	—	.249	.114
1	25/32	.188	.108
1 1/4	1 1/16	.161	.100
1 1/2	1 5/16	.144	.094
1 3/4	1 3/8	.141	.091
2	1 5/8	.126	.082
2 1/2	2 1/8	.105	.076
3	2 5/8	.091	.067

* Thin wood panel or single panes of glass

CORRECTION OF HEAT-LOSS FACTORS FOR FIBROUS INSULATION

How to Use Curves:

1. Locate "Heat-Loss Factor Without Insulation" on left-hand scales.
2. Line up ruler with same factor on right-hand scales and mark appropriate curve where it is crossed by the ruler.
3. Place ruler vertically through mark and read "Heat-Loss Factor With Insulation" on bottom (or top) scales.

FIG. 16. CEILINGS, FLOORS AND WALLS

Insulation completely fills joist or stud space.

Two sets of curves are given: one for constructions where the insulation only partially fills the space between framing members, leaving a resultant air space at least $\frac{3}{4}$ in. wide, and the other for constructions where the insulation completely fills the space. The latter curves compensate for the loss of the air space. (For ceilings without a floor on the top side of the joists and for floors without a ceiling on the underside of the joists, Fig. 16 should be used.)

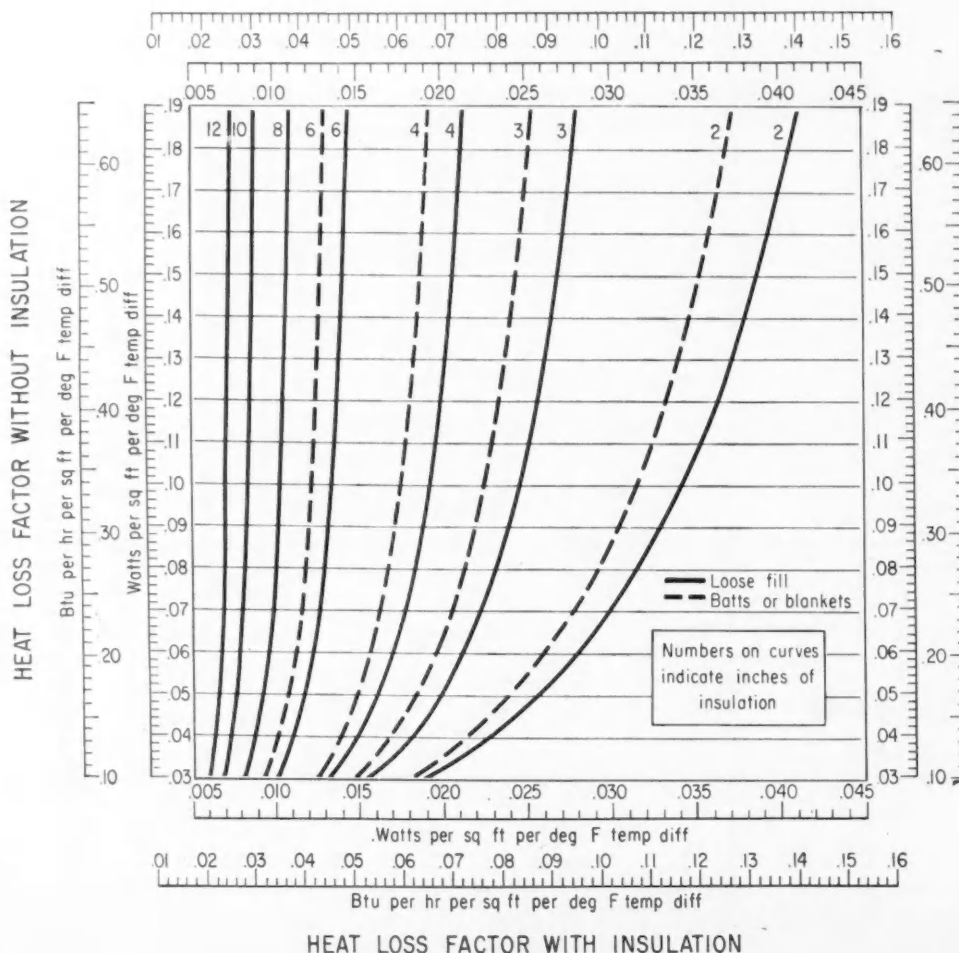
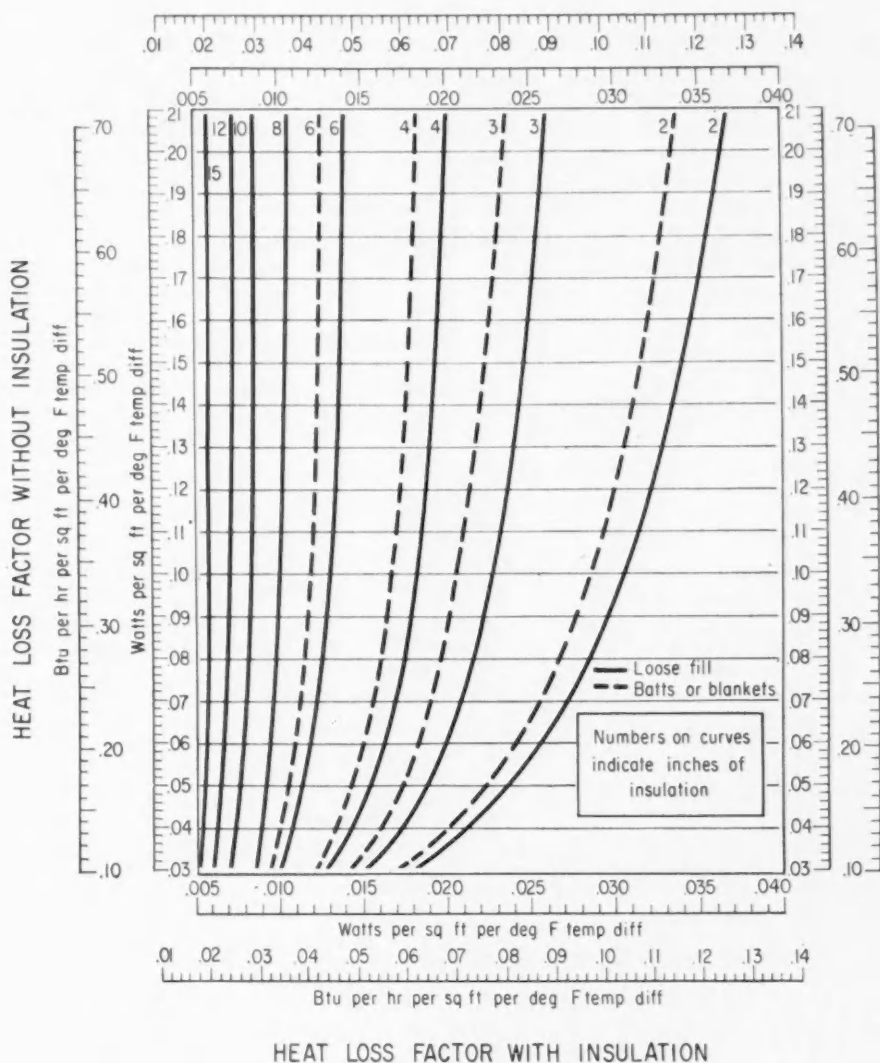


FIG. 17. CEILINGS, FLOORS AND WALLS

Insulation partially fills joist or stud space.



Curves are based on insulation conductivities of .27 and .30 Btu per hr per sq ft per deg TD for each inch of thickness for batts or blankets and loose fill, respectively. For thicknesses up to 6 in., curves are given for both batts or blankets (dashed curves) and loose fill (solid curves), since both types are available and in common use. Heat-loss scales are given both in terms of watts and Btu's to suit the familiarity of the user.

These curves may also be used for masonry walls faced with studs on the inside.

Where air spaces are involved, slight discrepancies may be introduced by applying the same curves to wall, floor and ceiling constructions due to the variation in insulating effect of the air spaces with direction of heat flow. However, such discrepancies will probably have less effect on the overall result than variations introduced during construction.

CORRECTION OF HEAT-LOSS FACTORS FOR REFLECTIVE INSULATION

How to Use Curves:

1. Locate "Heat-Loss Factor Without Insulation" on left-hand scales.
2. Line up ruler with same factor on right-hand scales and mark appropriate curve where it is crossed by the ruler.
3. Place ruler vertically through mark and read "Heat-Loss Factor With Insulation" on bottom (or top) scales.

It is assumed that the reflective material fastened to the tops of ceiling joists is exposed to an unheated attic space; that the material on the underside of the floor joists is exposed to an unheated basement or crawl space.

The effect of floor construction on the overall heat loss factor is slight; therefore only one factor is given for each air-space combination.

The curves of Fig. 18 were plotted from data given in Table 16A, Chapter 9, 1959 *Heating Ventilating Air Conditioning Guide*. They apply to frame walls or furred-out masonry walls, provided that each air space is at least $\frac{1}{4}$ in. wide.

The insulating effect of reflective air spaces varies with the direction of heat flow, the thickness of the spaces, the overall temperature difference, the emissivity of the reflecting material, and the relative conductance of the building materials bounding the air spaces; therefore no single set of correction factors can hope to account for all variables. However, reasonable variations from the conditions assumed in these charts will change the results probably no more than variations introduced during construction.

FIG. 18. FRAME CEILINGS

No Floor Above; Heat Flow Up

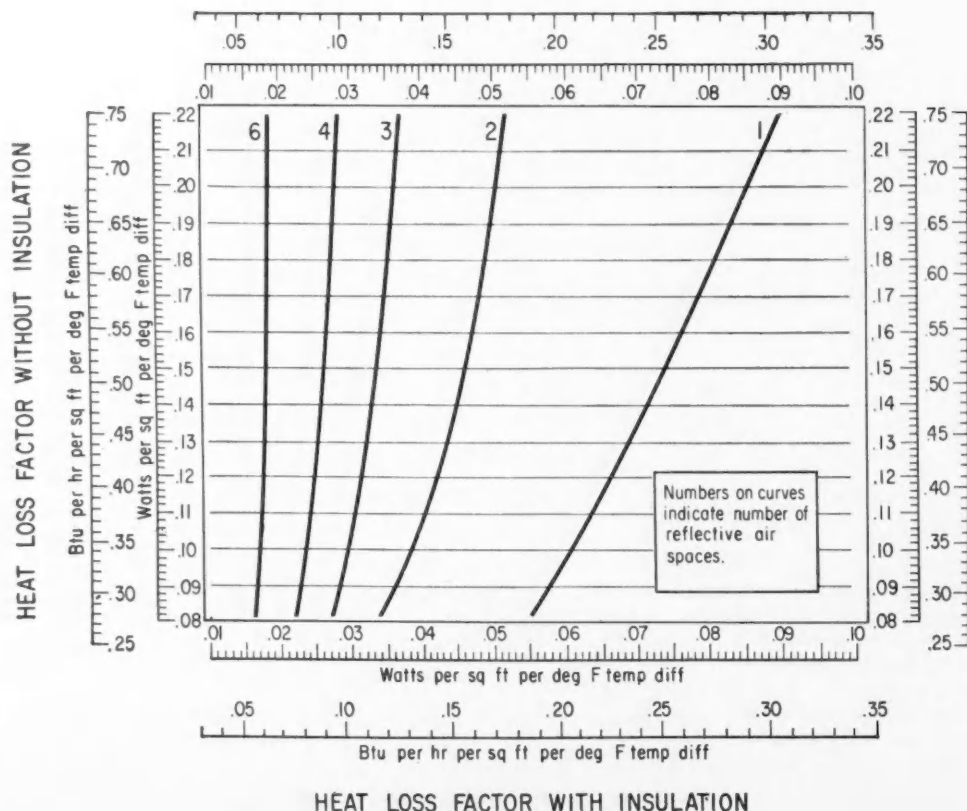


FIG. 19. FRAME FLOORS No Ceiling Below; Heat Flow Down

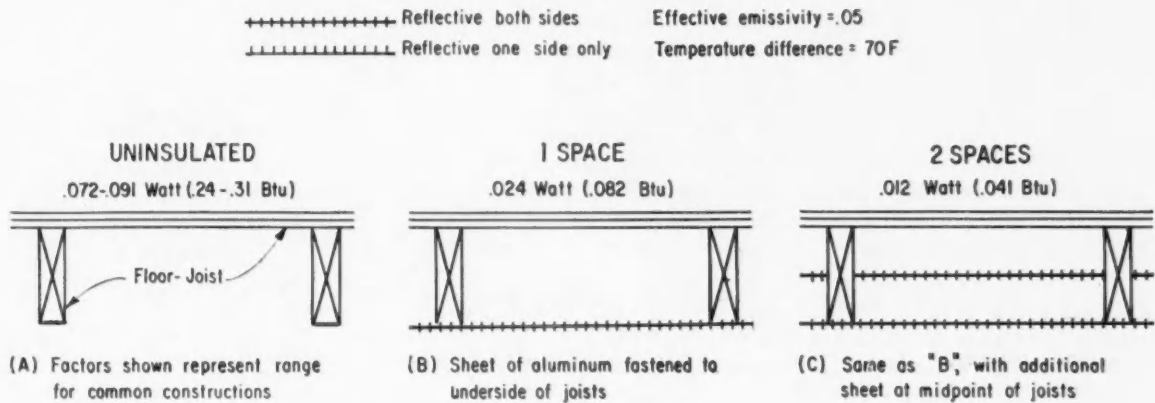
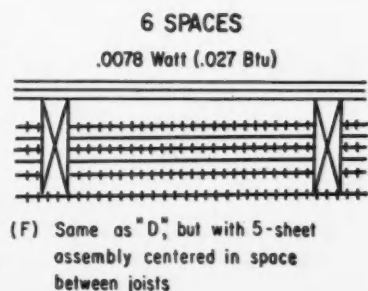
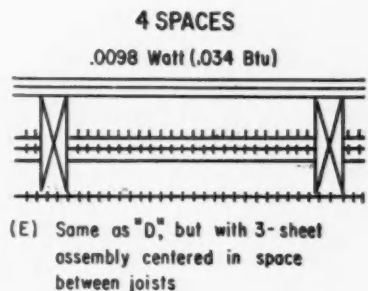
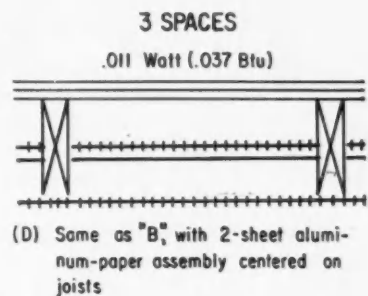
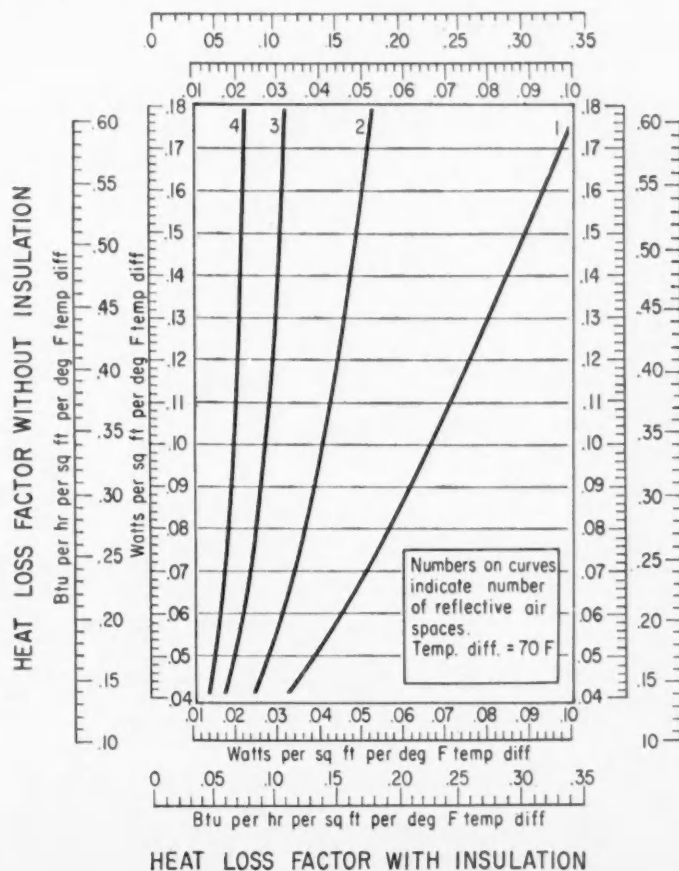


FIG. 20. WALLS Heat Flow Horizontal



ELECTRIC SPACE HEATING DATA (continued)

FIG. 21. CLIMATIC DATA—U.S. CITIES

Asterisks indicate airport stations; others are city office stations.
Average temperature = 65—(degree-days/heating days).

Location	Heating Season	Heating Days	Ave. Mean Temp, F	Degree-Days	Outside Design Temp, F	Location	Heating Season	Heating Days	Ave. Mean Temp, F	Degree-Days	Outside Design Temp, F
ALABAMA						INDIANA					
Anniston*	Oct 15-Apr 24	192	50.3	2820	12	Evansville*	Oct 4-Jun 15	255	47.9	4360	-4
Birmingham*	Oct 15-Apr 25	193	50.6	2780	12	Fort Wayne*	Sept 18-May 30	255	40.3	6287	-7
Mobile	Nov 2-Apr 1	151	54.9	1529	22	Indianapolis	Oct 2-May 18	229	42.6	5134	-8
Montgomery	Oct 25-Apr 10	168	53.4	1954	18	Terre Haute*	Sept 28-May 20	235	42.2	5366	-6
ARIZONA						IOWA					
Flagstaff*	Aug 12-Jul 5	328	42.1	7525	-4	Charles City	Sept 10-May 31	264	36.6	7504	-21
Phoenix	Nov 5-Apr 2	149	55.0	1492	36	Davenport	Sept 24-May 21	240	39.6	6091	-12
Yuma	Nov 15-Mar 7	113	56.6	951	38	Des Moines	Sept 23-May 23	243	39.2	6274	-13
ARKANSAS						Sioux City*	Sept 16-May 26	253	37.3	7012	-16
Fort Smith*	Oct 16-Apr 20	187	48.0	3188	6	KANSAS					
Little Rock*	Oct 17-Apr 21	187	49.1	2982	8	Concordia	Oct 2-May 19	230	41.9	5323	-11
CALIFORNIA						Dodge City	Oct 2-May 20	231	43.1	5058	-9
Eureka	.....	365	52.3	4632	32	Topeka	Oct 4-May 13	222	42.8	4919	-8
Fresno*	Oct 16-Apr 25	192	51.8	2532	32	Wichita*	Oct 7-May 14	220	44.2	4571	-6
Independence	Sept 25-May 23	241	49.1	3832	12	KENTUCKY					
Los Angeles	Nov 2-May 10	190	57.4	1451	41	Bowling Green*	Oct 4-May 16	225	46.0	4279	2
Sacramento	Oct 16-May 14	211	52.7	2600	30	Lexington*	Oct 1-May 21	233	43.6	4979	-2
San Diego*	Oct 22-Jun 2	224	58.0	1574	43	Louisville	Oct 6-May 10	217	45.3	4279	-2
San Francisco	.....	365	56.6	3069	37	LOUISIANA					
San Jose	Oct 7-Jun 7	244	55.1	2410	38	New Orleans	Nov 10-Mar 24	135	56.3	1175	26
COLORADO						Shreveport*	Oct 26-Apr 6	163	52.0	2117	14
Denver	Sept 15-Jun 7	266	43.7	5673	-12	MAINE					
Grand Junction*	Sept 25-May 23	241	41.0	5796	-3	Eastport	.....	365	42.4	8246	-9
Pueblo*	Sept 17-May 31	257	42.8	5709	-14	Portland*	Aug 27-Jun 25	303	39.7	7681	-9
CONNECTICUT						MARYLAND					
Bridgeport*	Sept 19-Jun 5	260	42.3	5896	-1	Baltimore	Sept 8-May 13	248	48.1	4203	8
Hartford*	Sept 12-Jun 2	264	41.7	6139	-2	MASSACHUSETTS					
New Haven*	Sept 14-Jun 8	268	42.5	6026	0	Boston*	Sept 17-Jun 5	262	42.9	5791	0
DELAWARE						MICHIGAN					
Wilmington*	Sept 27-May 19	235	44.1	4910	0	Alpena	Aug 25-Jun 25	305	38.5	8073	-10
DISTRICT OF COLUMBIA						Detroit*	Sept 17-Jun 2	259	40.3	6404	-4
Washington	Oct 2-May 12	223	45.9	4258	10	Escanaba	Aug 22-Jun 27	310	37.1	8657	-18
FLORIDA						Grand Haven	Aug 31-Jun 19	293	41.4	6915	-3
Jacksonville	Nov 10-Mar 21	132	56.6	1113	28	Grand Rapids	Sept 16-Jun 2	260	40.1	6474	-4
Miami	Dec 4-Mar 13	100	63.3	173	35	Houghton	Aug 9-Jul 6	332	38.0	8964	-18
Pensacola	Nov 3-Apr 2	151	55.5	1435	24	Lansing*	Sept 9-Jun 3	268	38.9	6982	-8
Tampa*	Dec 1-Mar 3	93	57.8	674	36	Marquette	Aug 24-Jul 1	312	37.7	8529	-16
GEORGIA						Sault Ste. Marie*	Aug 8-Jul 15	342	37.3	9475	-19
Atlanta	Oct 14-Apr 25	194	50.5	2811	11	MINNESOTA					
Augusta*	Oct 23-Apr 12	172	52.6	2138	20	Duluth	Aug 21-Jul 5	319	35.3	9474	-27
Macon*	Oct 23-Apr 9	169	52.9	2049	20	Minneapolis*	Sept 11-May 31	263	35.1	7853	-23
Savannah*	Oct 28-Apr 9	164	54.6	1710	24	Moorhead	Aug 23-Jun 16	298	34.0	9315	-29
IDAHO						St. Paul*	Sept 11-Jun 1	264	35.4	7804	-23
Boise*	Sept 9-Jun 12	277	43.7	5890	-10	MISSISSIPPI					
Lewiston*	Sept 13-Jun 8	269	44.6	5483	-12	Meridian*	Oct 17-Apr 14	180	52.0	2333	14
Pocatello*	Sept 4-Jun 20	290	40.9	6976	-17	Vicksburg	Oct 26-Apr 8	165	52.9	2000	15
ILLINOIS						MISSOURI					
Cairo	Oct 11-Apr 29	201	46.3	3756	0	Columbia*	Sept 29-May 17	231	42.9	5113	-9
Chicago*	Sept 21-May 29	251	39.9	6310	-11	Hannibal	Sept 24-May 29	239	43.1	5248	-12
Peoria*	Sept 22-May 27	248	40.5	6087	-13	Kansas City*	Oct 5-May 12	220	42.8	4888	-8
						St. Louis	Oct 8-May 10	215	44.2	4469	-5
						Springfield*	Oct 1-May 19	231	44.7	4693	-5

ELECTRIC SPACE HEATING DATA (continued)

Outside design temperature given is that which is likely to recur once every 13 years as the minimum daily mean temperature.

Location	Heating Season	Heating Days	Ave. Mean Temp, F	Degree-Design Days	Outside Temp, F	Location	Heating Season	Heating Days	Ave. Mean Temp, F	Degree-Design Days	Outside Temp, F
MONTANA						PENNSYLVANIA					
Billings*	Sept 4-Jun 16	286	40.2	7106	-31	Erie	Sept 20-Jun 4	258	41.3	6116	-3
Havre	Aug 29-Jun 22	298	37.4	8213	-39	Harrisburg*	Sept 22-May 20	241	43.2	5258	4
Helena	Aug 20-Jul 3	318	39.4	8126	-39	Philadelphia	Oct 2-May 17	228	45.2	4523	6
Kalispell*	Aug 17-Jul 5	323	40.1	8055	-31	Pittsburgh	Sept 28-May 19	234	43.4	5048	-3
Miles City*	Sept 7-Jun 13	280	37.1	7822	-35	Reading	Sept 26-May 21	238	43.7	5060	3
NEBRASKA						Scranton	Sept 15-May 30	258	41.6	6047	-2
Lincoln	Sept 27-May 21	237	40.3	5865	-15	RHODE ISLAND					
North Platte*	Sept 15-Jun 1	260	39.8	6546	-15	Block Island*	Sept 13-Jun 19	280	44.1	5843	7
Omaha*	Sept 24-May 20	239	39.2	6160	-17	Providence	Sept 18-Jun 1	257	43.2	5607	1
Valentine	Sept 12-Jun 5	267	38.5	7075	-21	SOUTH CAROLINA					
NEVADA						Charleston	Oct 28-Apr 10	165	54.3	1769	22
Reno*	Sept 4-Jun 26	296	44.6	6036	3	Columbia	Oct 19-Apr 17	181	52.4	2284	19
Winnemucca*	Sept 4-Jun 17	287	42.8	6369	-9	SOUTH DAKOTA					
NEW HAMPSHIRE						Huron*	Sept 12-Jun 3	265	29.8	7902	-21
Concord*	Aug 29-Jun 15	291	38.8	7612	-11	Pierre	Sept 4-Jun 17	287	39.2	7420	-22
NEW JERSEY						Rapid City*	Sept 5-Jun 17	286	26.3	7535	-22
Atlantic City	Sept 29-May 30	244	45.6	4741	-8	TENNESSEE					
Elizabeth	Sept 20-May 24	247	43.5	5302	2	Chattanooga*	Oct 8-May 4	209	48.8	3384	8
New Brunswick	Sept 17-May 30	256	43.9	5404	4	Knoxville*	Oct 8-May 4	209	47.8	3590	5
Plainfield	Sept 16-Jun 1	259	43.6	5535	4	Memphis	Oct 19-Apr 22	186	48.8	3006	6
Somerville	Sept 18-May 29	254	43.1	5586	2	Nashville*	Oct 11-May 2	204	47.8	3513	3
Trenton	Sept 25-May 21	239	43.8	5068	2	TEXAS					
NEW MEXICO						Abilene*	Oct 22-Apr 14	175	49.8	2657	7
Albuquerque*	Oct 3-May 12	222	45.2	4389	8	Amarillo*	Oct 2-May 17	228	45.9	4345	-2
Roswell*	Oct 8-May 3	208	48.5	3424	4	Corpus Christi*	Nov 15-Mar 15	121	56.6	1011	23
Santa Fe	Sept 1-Jun 15	287	43.9	6063	3	Dallas*	Oct 27-Apr 6	162	51.0	2272	8
NEW YORK						El Paso*	Oct 19-Apr 19	183	50.6	2641	20
Albany	Sept 15-May 28	256	40.3	6319	-9	Fort Worth*	Oct 27-Apr 10	166	50.8	2361	8
Binghamton*	Aug 30-Jun 16	291	39.1	7537	-7	Galveston	Nov 13-Mar 29	137	56.2	1211	23
Buffalo*	Sept 10-Jun 9	273	40.0	6838	-5	Houston	Nov 8-Mar 25	138	55.8	1276	19
Ithaca	Sept 4-Jun 9	279	40.9	6719	-4	Palestine	Oct 30-Apr 7	160	52.6	1980	11
New York	Sept 28-May 26	241	44.0	5050	5	San Antonio*	Nov 5-Mar 29	145	54.1	1579	19
Oswego	Sept 9-Jun 15	280	40.1	6975	-7	UTAH					
Rochester*	Sept 9-Jun 6	271	39.7	6863	-4	Salt Lake City	Sept 20-May 29	252	43.3	5463	-1
Syracuse*	Sept 13-Jun 2	263	40.2	6520	-10	VERMONT					
NORTH CAROLINA						Burlington*	Sept 3-Jun 10	281	37.0	7865	-17
Asheville	Sept 29-May 19	233	47.5	4072	5	Northfield	Aug 8-Jul 1	328	38.6	8719	-19
Charlotte*	Oct 9-Apr 30	204	49.3	3205	14	VIRGINIA					
Hatteras	Oct 23-May 3	193	52.6	2392	21	Cape Henry	Oct 12-May 12	213	49.5	3307	17
Raleigh	Oct 12-May 1	202	49.8	3075	14	Lynchburg*	Sept 29-May 12	226	46.6	4153	11
Wilmington*	Oct 19-Apr 24	188	52.6	2323	20	Norfolk	Oct 13-May 7	207	49.9	3119	15
NORTH DAKOTA						Richmond	Oct 6-May 9	216	47.8	3720	11
Bismarck*	Aug 31-Jun 16	290	33.9	9033	-31	Wytheville	Sept 13-Jun 2	263	45.9	5022	3
Devils Lake	Aug 27-Jun 22	300	31.9	9940	-32	WASHINGTON					
Grand Forks	Aug 15-Jun 23	313	33.8	9764	-31	Seattle*	Aug 28-Jul 2	309	50.6	5275	15
Williston	Sept 1-Jun 19	292	33.9	9068	-35	Spokane*	Aug 31-Jun 27	301	42.2	6852	-16
OHIO						Tacoma	Aug 13-Jul 9	331	50.3	4866	15
Cincinnati	Oct 4-May 14	223	44.7	4532	-3	Tatoosh Island	.....	365	49.3	5724	18
Cleveland	Sept 23-May 29	249	42.0	5717	-5	Walla Walla	Sept 20-May 27	250	45.6	4848	-12
Columbus	Sept 27-May 22	238	42.8	5277	-3	WEST VIRGINIA					
Dayton*	Sept 25-May 25	243	42.0	5597	-4	Elkins*	Sept 12-Jun 6	268	43.5	5773	-4
Sandusky	Sept 23-May 29	249	41.5	5859	-4	Parkersburg	Sept 30-May 18	231	44.4	4750	-1
Toledo*	Sept 16-May 31	258	40.2	6394	-5	WISCONSIN					
OKLAHOMA						Green Bay*	Sept 2-Jun 12	284	35.9	8259	-20
Oklahoma City	Oct 16-Apr 27	194	46.9	3519	-1	La Crosse*	Sept 10-May 31	264	36.0	7650	-20
OREGON						Madison	Sept 13-Jun 3	264	37.3	7300	-19
Baker	Aug 25-Jul 4	314	42.4	7087	-14	Milwaukee	Sept 15-Jun 12	271	39.4	6944	-17
Portland	Sept 16-Jun 18	276	50.0	4143	10	WYOMING					
Roseburg	Sept 13-Jun 19	280	50.3	4122	19	Cheyenne*	Aug 26-Jun 28	307	40.4	7562	-19
						Lander*	Aug 29-Jun 22	298	37.1	8303	-30
						Yellowstone Park	365	38.8	9554	-34

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H-1997 Corrosion Resistant Wiring Devices..... ☐

Name..... Title.....

Company.....

Address.....

COMPANY & TRADE NAMES



Alphabetical listing of company names,
trade names and addresses

The following listing contains

- 1 Company names, with complete addresses.
- 2 Company trade names, in capital letters for easy reference.
- 3 Other names by which companies may be or may have been known, cross-referenced to present company.

Trade names are listed solely on the basis of information supplied by the manufacturer and are not guaranteed to be registered or the exclusive property of the manufacturer concerned.

A

- A B C—Columbia Cable & Electric Corp
A C Transformer Corp 89 Madison St Newark NJ
ACF—Atlantic Conduit Fittings Co
ACF Industries Inc ACF Electronics Div Riverdale Md
ACI—American Coils Co
ACL—Columbia Cable & Electric Corp
ACW—American Creosote Works Inc
ADT Co—see American District Telegraph Co
A E Industrial Div Aircraft Armaments Inc P O Box 6853 Baltimore 4 Md
AEO—American Electric Cable Co
AFCO—Alhambra Foundry Co Ltd
AFS—AutoFyrStop Co
AG—Farrelly Co
AGA Div Elastic Stop Nut Corp—see Elastic Stop Nut Corp of America
A H—Arrow-Hart & Hegeman Electric Co
A J F Industries Inc—see Atlantic Transformer Div
A K Electric Corp 231 Front St Brooklyn 1 NY
AKM—American Klockner-Moeller Corp
A-MAL-GAM—Smith Welding Equipment Div
AMCO—American Solder & Flux Co
AMP Inc Eisenhower Blvd Harrisburg Pa
A & O—Allen & Olsen Mfg Co
Al Audio Engineers—see O'Brien Electric Corp
A-1 Conduit Fittings Corp 144-31 91st Ave Jamaica 35 NY
AOW Corp 450 N Ninth St Elwood Ind
A-P Controls Corp—see Controls Co of America
APAC—Keesbey & Mattison Co
APCO—Aurora Pump Div New York Air Brake Co
APM Corp—see APM-Hexcel Corp
APM-Hexcel Corp 41 Honeck St Englewood NJ
A-?—Aiken-Reed Inc
A & R—Air & Refrigeration Corp
A-S—Allen-Stevens Conduit Fittings Corp
ASCO—Automatic Switch Co
ASMC—Farrelly Co
ATI—Alexander-Tagg Industries Inc
A W H Co—see Haydon (A W) Co
A-Z—Plastic Wire & Cable Corp
ABELCOR—O'Brien Electric Corp
ABOGLAS—Natar Corp
Abolite Lighting Div Jones Metal Products Co West Lafayette Ohio
ABR-A-SAW—Collins Machinery Corp
Abrams Instrument Corp 606 E Shawnee St Lansing Mich
Abrams Lighting—see Crescent Mfg Co
ACCOLITE—Accurate Insulated Wire Corp
ACCPRENE—Accurate Insulated Wire Corp
ACCTHERM—Accurate Insulated Wire Corp
Accurate Electronics Co 2005 Blue Island Ave Chicago 11 Ill
Accurate Engineering Co—see Accurate Electronics Co
Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn
Accurate Mfg Co 6 Hepworth Place Garfield NJ
ACCWIRE—Accurate Insulated Wire Corp
ACE—American Hard Rubber Co
ACE—Armature Coil Equipment Inc
ACE—Arro Expansion Bolt Co
ACE—Peer Inc
Ace Lighting Products Co 171 Broad St SW Atlanta 3 Ga
ACE—Miller Co
ACHROMATIC—Keystone Electric Mfg Co
Ackerman-Johnson Co 625 W Jackson Blvd Chicago 6 Ill
ACME—Co-operative Utilities Co Inc
ACME—McCahey Mfg & Supply Co
Acme Electric Corp 45 Water St Cuba NY
Acme Electric Heating Co—see Acme Electric Heating Corp
Acme Electric Heating Corp 99 Reading St Boston 19 Mass
Acme Fire Alarm Company Inc 106 Seventh Ave New York 11 NY
Acme Industries Inc 620 N Mechanic St Jackson Mich
Acme Lighting & Mfg Co 949 E 31 St Los Angeles 11 Calif
Acme Lite Products Co Inc Congers NY
Acme Mfg & Gasket Co 738 N 41 St Phila 4 Pa
Acme Steel Co 135th St & Perry Ave Chicago 27 Ill
Acme Welded Pipe & Coil Co—see Acme Industries Inc
Acme Wire Co Utility Products Div 1255 Dixwell Ave New Haven Conn
Acorn Insulated Wire Co 36 Freeman St Pawtucket RI
Acoustica Associates Inc 10400 Aviation Blvd Los Angeles 45 Calif
Acra Electric Corp 9901 Pacific Ave Franklin Park Ill
Acra Industrial Electric Co—see Acra Electric Corp
ACRAWATT—Acra Electric Corp
ACRI-LUMINUS—Luminous Ceilings Inc
ACRITEX—Lightonics
ACRO-ARC—Acro Welder Mfg Co
ACRO-ETCH—Acromark Co
ACRO-LITE—Acro Switch Div
ACRO-MAGNETIC—Acro Welder Mfg Co
Acro Mfg Co—see Acro Switch Div
Acro-Mu Switch Div—see Acro Switch Div
Acro Switch Div Robertshaw-Fulton Controls Co 2040 E Main St Columbus 16 Ohio
Acro Welder Mfg Co 1719 W St Paul Ave Milwaukee 3 Wis
ACROLEAF—Acromark Co
ACROLITE—Acromark Co
Acromark Co 320 Morell St Elizabeth 4 NJ
ACROMARKER—Acromark Co
ACROMATIC—Acro Welder Mfg Co
ACRYLENS—Lightolier Inc
- ACRYLIGLAS—Natar Corp
Active Specialty Corp Elm St Walden NY
ACTOGRAP—Newage Industries Inc
Acton Laboratories Inc 533 Main St Acton Mass
ACUSTI-LUMINUS—Luminous Ceilings Inc
Adale Mfg Co 14300 Lorain Ave Cleveland 11 Ohio
ADALOY—Adams Engineering Co
Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo
Adams Engineering Co 31711 Solon Rd Solon Ohio
Adams & Westlake Co 1025 N Michigan St Elkhart Ind
ADAPT-A-LITE—Cable Electric Products Inc
ADAPT-O-MOUNT—Overly-Hautz Co
ADAPTA-STUD—Tomic Sales & Engineering Co
ADAPTABEL—Edwards Co Inc
ADAPTALITE—MiroFlector Co Inc
ADAPTOMATIC—Fedders Corp
ADBOND—Hitemp Wires Co
Adcrafters Co 325 W Huron St Chicago 10 Ill
ADD-A-BREAKER—Westinghouse Electric Corp
ADD-A-CALL—Simpson (Mark) Mfg Co Inc
ADD-A-PHASE—System Analyzer Corp
ADD-A-POINT—Wama Co
ADD-A-TIER—Bernard-Franklin Co Inc
ADD-A-UNIT—Blonder-Tongue Laboratories Inc
ADD-O-LEER—Duray Fluorescent Mfg Co
ADDA-STRIP—Garcy Lighting Div
ADDAPLUG—Associated Engineering Corp
ADJUSCO—Adjustable Fixture Co
ADJUSCO-LDC—Adjustable Fixture Co
ADJUST-A-VOLT—Standard Electrical Products Co
ADJUST-ALL—Weksler Instruments Corp
ADJUST-ANGLE—Weksler Instruments Corp
ADJUST-O-LITES—Litecraft Mfg Co
ADJUST-O-SPOTS—Litecraft Mfg Co
ADJUSTA-LAMP—Adjusta Post Mfg Co
Adjusta Post Mfg Co 908 St Clair St Akron 7 Ohio
ADJUSTA-PULLEY—Watterdore Co
Adjustable Fixture Co 104 E Mason St Milwaukee 2 Wis
ADJUSTAT—Smith-Gates Corp
ADJUSTO-DECK—Haertel (Walter) Co
ADJUSTOHEM—Ward Leonard Electric Co
ADLAKE—Adams & Westlake Co
Adoact Sign Co—see General Indicator Corp
Adre Co 1005 S 26 St Milwaukee 4 Wis
ADVAN-GUARD—Advance Transformer Co
ADVANCE—Beaver-Advance Corp
ADVANCE—Elgin National Watch Co
Advance Transformer Co 2950 N Western Ave Chicago 18 Ill
Aemco Inc—see Telex/Aemco
AERO—American District Telegraph Co
AERO-CRANE—Vanguard Mfg Co
AERO-FAN—Emerson-Pryne Co
Aero Instrument Co—see Aero Instrument Facility
Aero Instrument Facility Northrop Corp-Ventura 11975 Sherman Way North Hollywood Calif
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AERODYNE—Jeffrey Mfg Co
Aeroli Products Co Inc 69 Wesley St South Hackensack NJ
Aerolux Electric Lamp Corp—see Aerolux Light Corp
Aerolux Light Corp 653 11th Ave New York 36 NY
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Aeronautical Electric Co 5656 Northwest Highway Chicago 30 Ill
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Afco Lite Corp 137 N Wolcott Chicago 22 Ill
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Air Controls Inc 2310 Superior Ave Cleveland 14 Ohio
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Air-Marine Motors Inc East Bethpage Rd Plainview NY
AIR MOVER—Mine Safety Appliances Co
Air & Refrigeration Corp 439 Madison Ave New York NY
AIR-ROL—Rollway Bearing Co Inc
AIRBOY—Mitchell Industries Inc
Aircraft Marine Products Inc—see AMP Inc
Aircraft Specialties Inc 415 Howard St Lapeer Mich
AIRE-RECTIFIER—Larco Inc
Airfan Engineering Co 7401 Telegraph Rd Los Angeles 22 Calif
AIRLUX—Sun-Lite Mfg Co
AIRMASTER—Haertel (Walter) Co
AIRPELER—Ammerman Co Inc
AIRSEAL—Kearney (James R) Corp
Aisercro Mfg Co 3785 Bigelow Blvd Pittsburgh 13 Pa
AIRSPREAD—Hunter Div
AIRSWEEP—Progress Mfg Co Inc
Airtemp Div Chrysler Corp 1600 Webster St Dayton 1 Ohio
AIRTRUL—Reeves Pulley Div Reliance Electric & Engineering Co
AIRXPELER—Ammerman Co Inc
- Aiken-Reed Inc 2802 Wollmer St Manitowac Wis
AJAX—Ceilheat Inc
AJAX—Security Insert Co
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Ajax Electric Co 954 Frankford Ave Phila 23 Pa
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ALL-WEATHER—Mine Safety Appliances Co
ALL-WEATHER—Robbins & Myers Inc
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ALLEN—Excel Electric Service Co Inc
ALLEN—Lint (Clyde W)
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Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich
Allen Iron & Steel Co P O Box 550 Norristown Pa
Allen & Olsen Mfg Co 4230 Del Rey Ave Venice Calif
Allen-Stevens Conduit Fittings Corp 33-53 62nd St Woodside 77 NY
ALLEN-TRONIC—Allen Electric and Equipment Co
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ALLGLAS—Halo Lighting Products Inc
Alliance Mfg Co Inc Lake Park Blvd Alliance Ohio
Allied Industries Inc P O Box 119 Ogallala Neb
Allied Lightning Protection—see Security Mfg & Contracting Co
Allied Mfg & Sales Co 3101 W Grand Ave Chicago 22 Ill
Allied Metal Stamping Co 1475 S 6th St Camden 4 NJ
Allied Precision Industries 425 Stevens St (P O Box 149) Geneva Ill
ALLIGATOR—Porcelain Products Inc
ALLIGATOR JAW—Anderson (Albert & JM) Mfg Co
Allis (Louis) Co 427 E Stewart St Milwaukee 1 Wis
Allis-Chalmers Mfg Co 6930 S 70th St Milwaukee 1 Wis
ALLISPEDE—Allis (Louis) Co
Allmetal Engineering Inc 1003 S Date Ave Alhambra Calif
ALMAG—Alpha Wire Corp
Almo Mfg Co Inc 618 Jersey Ave Union Beach NJ
ALMICO—Crucible Steel Co of America
ALPHA—Trombetta Solenoid Corp
Alpha Metals Inc 60C Water St Jersey City 4 NJ
Alpha Wire Corp 200 Varick St New York 14 NY
Alphaduct Wire & Cable Co 25 Van Dyke Ave (P O Box 709) New Brunswick NJ
ALPHLEX—Alpha Wire Corp
ALTEMP—Alpha Wire Corp
ALTERNAC—Electric Arc Inc
ALTIMATIC—Air-Marine Motors Inc
ALU-FLEX—Auburn Mfg Co
ALUMALET—Killark Electric Mfg Co
ALUMALLOY—Killark Electric Mfg Co
ALUMATIC—Rich (Phil) Fan Mfg Co Inc
ALUMAWELD—Johnson Mfg Co Inc
ALUMI-DONE—Globe Lighting Products Inc
ALUMILIFT—Round (David) & Son Inc
ALUMINAIRE—McPhibben Mfg Co Inc
Aluminum Co of America 1501 Alcoa Bldg Pittsburgh 19 Pa
ALUMOWELD—Copperweld Steel Co
Alwalt Mfg Co Inc 1706 Lapham Dr (P O Box 1171) Modesto Calif

ANACOIL—Associated American Winding Machine Inc
 AMADCO—Associated Manufacturers & Distributors Corp
 AMAIRCELL—American Electric Cable Co
 AMARINE—American Steel & Wire Div
 AMAZALLOY—All-State Welding Alloys Co Inc
 AMCODRUMS—Art Metal Lighting Div
 AMCOLENS—Art Metal Lighting Div
 AMER X—American Insulated Wire Corp
 AMERAP—American Electric Cable Co
 AMERBESTOS—American Steel & Wire Div United States Steel Corp
 AMERCLAD—American Steel & Wire Div
 AMERCORD—American Steel & Wire Div
 AMERFLEX—American Flexible Conduit Co Inc
 American Air Filter Co Inc 215 Central Ave Louisville 8 Ky
 AMERICAN BEAUTY—American Electrical Heater Co
 American Billrite Rubber Co Boston Woven Hose & Rubber Div 29 Hampshire St Cambridge Mass
 American Blower Corp—see American-Standard
 American Blower Div American-Standard—see American-Standard Industrial Division
 American Coach & Body Co—see McCabe-Powers Body Co
 American Coils Co Route 524—Lakewood Rd Farmingdale NJ
 American Concrete Corp—see American Concrete Div
 American Concrete Div Union Metal Mfg Co Dahring Rd Waukegan Ill
 American Coolair Corp 3604 Mayflower St (P O Box 2300) Jacksonville 3 Fla
 American Crosstite Works Inc 1305 Dublin St (Box 4008) New Orleans 18 La
 American Crossarm and Conduit Co 7726 Sheridan Rd Chicago 26 Ill
 American District Telegraph Co 155 Sixth Ave NY 13 NY
 American Electric Cable Co 181 Appleton St Holyoke Mass
 American Electric Switch Corp—see American Electric Switch Div
 American Electric Switch Div Clark Controller Co 1146 E 152 St Cleveland 10 Ohio
 American Electrical Heater Co 6110 Cass Ave Detroit 2 Mich
 American Engineering Co—see A E Industrial Div
 Aircraft Armaments Inc
 American Flexible Conduit Co Inc 969 Shawmut Ave New Bedford Mass
 American Floor Machine Co 518 S St Clair St Toledo 3 Ohio
 American Fluorescent Corp 1243 N Paulina St Chicago 22 Ill
 American Gas Accumulator Co—see Elastic Stop Nut Corp of America
 American Hard Rubber Co Ace Rd Butler NJ
 American Insulated Wire Corp 36 Freeman St Pawtucket RI
 American Klockner-Moeller Corp Box 5007 Tulsa 12 Okla
 American Louver Co 5308 N Elston Ave Chicago 30 Ill
 American Lumber & Treating Co—see Koppers Co Inc
 American Metal Hose Div—see Anaconda Metal Hose Div
 American Metal Moulding Co 146 Coit St Irvington NJ
 American Pipe Bending Machine Co Inc Poultny Vt
 American Pipe Tool Co 4856 W Kinzie St Chicago 44 Ill
 American Products Mfg Co Inc 8127-33 Oleander St New Orleans 18 La
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 American Rectifier Corp 95 Lafayette St NY 13 NY
 American Saw & Mfg Co 67 Boylston St Springfield For Mass
 American Sealants Co 705 N Mountain Rd Hartford 11 Conn
 American Silver Co Inc Industrial Div 36-07 Prince St Flushing 54 NY
 American Solder & Flux Co 19th & Willard Sts Phila 40 Pa
 American-Standard Air Conditioning Div Electric Heating Dept 40 W 40 St New York 18 NY
 American-Standard Controls Div 5900 Trumbull Ave Detroit 8 Mich
 American-Standard Industrial Div Detroit 32 Mich
 American Steel & Wire Div United States Steel Corp Rockefeller Bldg Cleveland 13 Ohio
 American Super-Temperature Wires Inc Winooski Vt
 American Tool & Engineering 2105 Moore St San Diego Calif
 American Transom Co—see Security Insert Co
 American Vacuum Co 8100 North Ridgeway Skokie Ill
 AMERICANA—Project Fixture Mfg Corp
 AMERLOK—American Steel & Wire Div United States Steel Corp
 AMERPLASTIC—American Electric Cable Co
 AMERPRENE—American Insulated Wire Corp
 AMERSHIELD—American Electric Cable Co
 AMERTHERM—American Insulated Wire Corp
 AMERTROL—American Insulated Wire Corp
 AMERY—American Insulated Wire Corp
 AMETALLIC—American Steel & Wire Div
 Ammerman (CL) Co—see Ammerman Co Inc
 Ammerman Co Inc P O Box 182 Stillwater Minn
 Ammo Products 909 Franklin St NE Washington DC
 AMP-FRA-LITE—Ampere Industries
 AMP-QUARTZ—Ampere Industries
 AMP-TRAP—Chase-Shawmut Co
 Ampere Industries 60 Boston St Newark 3 NJ
 Amprite Co Inc 561 Broadway NY 12 NY
 Amplex Corp Glen Cove Rd Carle Place Long Island NY

Amplex Div Chrysler Corp P O Box 2718 Detroit 31 Mich
 Amplex Mfg Co—see Amplex Div
 AMPLI-COUPLER—Blonder-Tongue Laboratories Inc
 AMPLI-SPEED—Electric Machinery Mfg Co
 AMPLICAL—Rauland-Borg Corp
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 AMPLIVERTER—Blonder-Tongue Laboratories Inc
 Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY
 AMPROBE JR—Amprobe Instrument Corp
 Anaconda Metal Hose Div Anaconda American Brass Co P O Box 791 Waterbury 20 Conn
 Anaconda Wire & Cable Co 25 Broadway New York 4 NY
 ANACONDALLOY—Anaconda Wire & Cable Co
 ANALAC—Anaconda Wire & Cable Co
 Anchor Mfg Co P O Box 959 Manchester NH
 Anchor Metal Co Inc 966 Meeker Ave Brooklyn 22 NY
 Anchor Packing Co 401 N Broad St Philadelphia 8 Pa
 ANDER-CRIMP—Anderson Electric Corp
 Anderson (WE) Inc 320 W 80 St Kansas City 14 Mo
 Anderson Brass Works—see Anderson Electric Corp
 Anderson (Albert & JM) Mfg Co 289 A St Boston 10 Mass
 Anderson Electric Corp P O Drawer 2151 Birmingham 1 Ala
 Andrews (AM) Co 4621 SW Beaverton Hwy Portland 1 Ore
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 ANKOPRENE—Anchor Packing Co
 ANKORITE—Anchor Packing Co
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 Ansonia Electrical Co—see Ansonia Wire & Cable Co
 Ansonia Wire & Cable Co 111 Martin St Ashton RI
 ANTENSIFIER—Blonder-Tongue Laboratories Inc
 Anthony (F M) Co 773 University Ave Berkeley 10 Calif
 Anthony Lighting Corp 400 S Desplaines Ave Forest Park Ill
 ANTI-ARC—Palmer Electric & Mfg Co
 ANTI-DRIP—Zippertubing Co
 ANTI-KORODE—Arco Mfg & Sales Corp
 Apex Bolt Products Co 452-458 N Claremont Ave Chicago 12 Ill
 Apex Sheetmetal Works—see Apex Products Co
 Apex Wire & Cable Corp 237 37th St Brooklyn 32 NY
 Apex Products Co 1821 N Eastlake Ave Los Angeles 31 Calif
 APOLLO—Bramco Inc
 Apollo Lighting Fixture Co Inc 162 W Third St Mt Vernon NY
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill
 Appleton Rubber Co Inc 57 Cornwall St Boston 30 Mass
 Applied Dynamics Corp—see Atlee Corp
 AQUA-CAL—Chicago Decal Co
 AQUA-TEMP—Acra Electric Corp
 AQUALUX—Luxor Lighting Products Inc
 AQUASORB—Turco Products Inc
 AQUASTAT—Minneapolis-Honeywell Regulator Co
 AQUATHENE—General Cable Corp
 ARC-ESCENT—Luxor Lighting Products Inc
 ARCLINE—Petelco Inc
 Arco Mfg Co 1701 13th Ave North (Box 817) Grand Fork ND
 ARCO WAND—American Vacuum Co
 ARCTROL—Mullenbach Div
 AREALENS—Art Metal Co
 AREALUX—Lighting Products Inc
 Arex Co 612 N Michigan Ave Chicago 11 Ill
 AREX-AUSTOR—Arex Co
 Argo Sales Co—see Argo Products Co
 Argo Products Co 3500 Goodfellow St Louis 20 Mo
 ARGOSY—Atlas Overhead Door Co
 ARIN—Arex Co
 ARISTOCRAT—Cellheat Inc
 ARISTOLITE—Guth (Edwin F) Co
 Arjac Products Inc 55-59 Halstead St Rochester 10 NY
 Ark-Is Switch Corp 51 Water St Watertown Mass
 ARK-TROL—Crouse-Hinds Co
 ARKLESS—Economy Fuse Div
 Arkon Products Co P O Box 3501 Cleveland 18 Ohio
 ARKITE—Crouse-Hinds Co
 Arlaxov Mfg Co—Radionic Transformer Co
 ARMAKOTE—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
 Armature Coil Equipment Inc 2605 Vega Ave Cleveland 13 Ohio
 ARMATURO—Johns-Manville
 Armco Div Armco Steel Corp Middletown Ohio
 ARMITE—Spaulding Fibre Co Inc
 ARMO-LOK—Phelps Dodge Copper Products Corp
 ARMOR-GRIP—Preformed Line Products Co
 Armstrong-Bray & Co 5366 Northwest Highway Chicago 30 Ill
 Armstrong Bros Tool Co 5200 W Armstrong Ave Chicago 46 Ill
 Armstrong Furnace Co 851 W Third Ave Columbus 12 Ohio
 Arno Adhesive Tapes Inc 5183 Ohio St Michigan City Ind
 ARNOFOAM—Arno Adhesive Tapes Inc
 ARRO-CORE—Arro Expansion Bolt Co

Arro Expansion Bolt Co P O Box 388 Marion Ohio
 ARROFLUTE—Arro Expansion Bolt Co
 Arrolet Corp Foot of Bower St Montgomery Pa
 ARROVAL—Arrolet Corp
 ARROW—Arrow-Hart & Hegeman Electric Co
 Arrow Conduit & Fittings Corp 108-20 180th St Jamaica 33 NY
 Arrow Electric—see Arrow-Hart & Hegeman Electric Co
 Arrow Fastener Co Inc 1 Junius St Brooklyn 12 NY
 Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn
 Arrow Lamps Inc 1270 Broadway New York 1 NY
 ARROWHEAD—Walker Brothers
 Arso Mfg & Sales Corp 438 Tenth Ave New York 1 NY
 Art Metal Co—see Art Metal Lighting Div
 Art Metal Lighting Div Wakefield Corp 1814 E 40 St Cleveland 3 Ohio
 Art Specialty Co 3720 N Milwaukee Ave Chicago 41 Ill
 Artcraft Div Special Products Co—see Special Products Co
 Artcraft Fluorescent Corp—see Artcraft Lighting Co Inc
 Artcraft Lighting Co Inc 248 McKibben St Brooklyn 6 NY
 ARTIC—Yardney Electric Corp
 Artistic Lamp Mfg Co Inc 109 Eighth St Passaic NJ
 Artialer Corp 141 Lanza Ave Garfield NJ
 Artos Engineering Co 2757 S 28 St Milwaukee 46 Wis
 Arvin Industries Inc Columbus Ind
 ASARCOLO—Federated Metals Div
 ASBESTICA—Johns-Manville
 ASBESTITE—Burndy Corp
 ASBESTOMENT—Johns-Manville
 ASBESTON—United States Rubber Co
 ASBESTOS EBONY—Johns-Manville
 Asheville-Schoonmaker Mica Co 900 Jefferson Ave Newport News Va
 Assembly Products Inc Chesterland 31 Ohio
 Associated American Trading Div—see Associated American Winding Machines Inc
 Associated American Winding Machines Inc 750 St Ann's Ave New York 56 NY
 Associated Engineering Corp 65 Kent St Brookline 46 Mass
 Associated Manufacturers & Distributors Corp 5015 S E Haly St Portland 6 Ore
 Associated Mills 307 W Monroe St Chicago 6 Ill
 Associated Research Inc 3789 W Belmont Ave Chicago 18 Ill
 ASTRA-LITE—Metalcraft Products Co Inc
 ATCOTRAN—Automatic Timing & Controls Inc
 ATCOTROL—Automatic Timing & Controls Inc
 ATCOTRONIC—Automatic Timing & Controls Inc
 Athol Machine & Foundry Co 82 South St Athol Mass
 Atomkatic Valve Co Inc 545 W Abbott St Indianapolis Ind
 Atlantic Conduit Fittings Co 450 Western Ave Boston Mass
 Atlantic Engravers Inc 52 Ocean Ave Amityville NY
 Atlantic Transformer Co 8330 Hegeman St Philadelphia 36 Pa
 Atlantic Transformer Corp—see Atlantic Transformer Div
 Atlantic Transformer Div New London Instrument Co Inc 30 Hynes Ave Groton Conn
 ATLAS—SKF Industries Inc
 ATLAS—Tevco Insulated Wire
 ATLAS-AIRE—Atlas Tool & Mfg Co
 Atlas Asbestos Co 423 Walnut St North Wales Pa
 Atlas E-E Corp—see Atlee Corp
 Atlas Electric Products Co 319 Ten Eyck St Brooklyn 6 NY
 Atlas Electronics Mfg Co—see Atlee Corp
 Atlas Metal Industries 259 W 23 St Hialeah Fla
 Atlas Mineral Products Co Mertztown Pa
 Atlas Overhead Door Co Mill St at Reading Railroad Quakertown Pa
 Atlas Sheet Metal Works—see Atlas Metal Industries
 Atlas Tack Corp Pleasant & South Sts Fairhaven Mass
 Atlas Tool and Mfg Co 5147 Natural Bridge Ave St Louis 15 Mo
 Atlee Corp Atlas Div 2 Lowell Ave Winchester Mass
 Atlight Lighting Equipment—see Atlas Electric Products Co
 ATLITE—Atlas Electric Products Co
 ATMO—Kilde Ultrasonic & Detection Alarms Div
 ATTEND-A-PHONE—Bogen-Presto Div
 AUBESTON—Auburn Mfg Co
 Auburn Mfg Co Pease Ave Stack St Middletown Conn
 AUDIOSPHERE—Simpson (Mark) Mfg Co Inc
 AURALITE—Century Lighting Inc
 AURORA—Metalcraft Products Co Inc
 Aurora Pump Co—see Aurora Pump Div New York Air Brake Co
 Aurora Pump Div New York Air Brake Co 54 Loucks St Aurora Ill
 Austin (M B) Co—see Stanco Electric Products Co
 AUT-O-DOR—Richards-Wilcox Mfg Co
 AUTEX—Wilhard Sales
 Auth Electric Co Inc 34-20 45th St LIC 1 NY
 Auth Electrical Specialty Co Inc—see Auth Electric Co Inc
 AUTHOTONE—Auth Electric Co Inc
 Auto Arc-Weld Mfg Co 9615 Meech Ave Cleveland 5 Ohio
 AUTO-BIN-DICATOR—Bin-Dicator Co
 AUTO-BLOC—Round (David) & Son Inc
 AUTO-BRIDGE—Industrial Instruments Inc
 AUTO-EQUIP—Allen Electric and Equipment Co
 AUTO-MAC—Gemco Electric Co
 AUTO-PHONE—Couch (S H) Co Inc
 Autocal Co 58 Warden Ave Shelby 9 Ohio

AUTOCON—Automatic Control Co
 AUTODYNE—Westinghouse Electric Corp
 AUTOFLEX—Universal Metal Hose Co
 AUTOFYRstop Co 2035 Washington Ave Phila 46 Pa
 AUTOGAP—Hubbard & Co
 AUTOMATIC Div of Yale & Towne Mfg Co 101 W 87th St Chicago 20 Ill
 Automatic Control Co 995 University Ave St Paul 4 Minn
 Automatic Devices Div of Ametek Inc Sellersville Pa
 Automatic Electric Mfg Co—see Aemco Inc
 Automatic Electric Sales Corp Northlake Ill
 Automatic & Precision Mfg Co—see APM-Hesseal Corp
 Automatic Products Co—see Controls Co of America
 Automatic Switch Co 50-56 Hanover Rd Florham Park NJ
 Automatic Temperature Control Co—see Automatic Timing & Controls Inc
 Automatic Timing & Controls Inc King of Prussia Pa
 Automatic Transportation Co—see AUTOMATIC Div of Yale & Towne Mfg Co
 Automatic Vulcanizers Corp 16 Hudson St New York 13 NY
 Automation Products Inc 3030 Max Roy St Houston 24 Tex
 AUTOMATOR—Marathon Electric Mfg Corp
 AUTOMATROL—Nelson Electric Mfg Co
 AUTORESET—AutoFYRstop Co
 AUTOSSET—Stromberg Div General Time Corp
 AUTOSPEED—Stromberg Div General Time Corp
 AUTOSTATIC—Lake Shore Electric Corp
 AUTOTAK—Howell Instruments Inc
 AUTOTEMP—Howell Instruments Inc
 Autotron Inc 3629 N Vermilion St Danville Ill
 AUTYSTAT—Ward Leonard Electric Co
 AVERNARIUS CARBOLINEUM—Carbolineum Wood Preserving Co
 AVIGATOR—Mitchell Industries Inc
 Avion Div—see ACF Industries Inc ACF Electronics Div
 AXIFLO—Westinghouse Electric Corp
 AXIOM—Ward Leonard Electric Co
 AXIVANE—Joy Mfg Co

B

B-LINE—Black (M) Mfg Co
 BAC—Ettco Wire & Cable Corp
 BBB—Becker Bros Carbon Co
 B & C Metal Stamping Co P O Box 2506 Station D Atlanta 18 Ga
 BD—Beede Electrical Instrument Co Inc
 BFC—Bernard-Franklin Co Inc
 B & H Instruments Inc—see Howell Instruments Inc
 B M—Briegleb Method Tool Co
 B M & D—B M D & R Inc
 B M D & R Inc 7020 Walker St St Louis Park 16 Minn
 B-T LABS—Blonder-Tongue Laboratories Inc
 BTC—Berkshire Transformer Corp
 BTC—Brewer-Titchener Corp
 BVJ—Burgess Vibrocrafters Inc
 B/W Controller Corp 2200 E Maple Rd Birmingham Mich
 BABY-COM—Fanon Electronic Industries Inc
 BABY COMBO—Mole-Richardson Co
 BABY DIGGER—Cleveland Trencher Co
 BABY VENT—Buffalo Forge Co
 BADGER—Reliance Time Controls Inc
 Badger Die Casting Corp 201 W Oklahoma Ave Milwaukee 7 Wis
 Bahnsen Co 1001 S Marshall St Winston-Salem NC
 Bailey Meter Co 1050 Ivanhoe Rd Cleveland 10 Ohio
 Baker-Barkon Co 1335 S W Morrison St Portland Ore
 Baker Perkins Inc Saginaw Mich
 Baker-Roos Inc 602 W McCarty St Indianapolis 6 Ind
 BAKER SCAFFOLD—Baker-Roos Inc
 BALANCE—Self-Lifting Piano Truck Co
 BALCO—Driver (Wilbur B) Co
 Baldor Electric Co 4353 Duncan Ave St Louis 10 Mo
 BALLOLITE—Line Material Industries
 Ballymore Co Lincoln & Garfield Aves West Chester Pa
 BAND-ROD—Sherman (HB) Mfg Co
 BANNER-AIRE—Argo Products Co
 BANTAM—Small Motors Inc
 BANTAM-BIN-DICATOR—Bin-Dicator Co
 Bar-Brook Mfg Co Inc 6133-35 Linwood Ave Shreveport La
 Barber-Colman Co P O Drawer 99 Rockford Ill
 Barber Electric Mfg Co Inc 30 Chestnut St N Attleboro Mass
 Barber-Greene Co 400 N Highland Ave Aurora Ill
 Barbours (J E) Co—see Ludlow Textile Products
 Barkelaw Electric Mfg Co 1905 Columbia Ave Middletown Ohio
 Barkon-Frink Tube Lighting Corp—see Frink Corp
 Barksdale Valves 5125 Alcoa Ave Los Angeles 58 Calif
 BAROHHM—Ward Leonard Electric Co
 Barrett Varnish Co 1532 S 50th Ct Cicero 50 Ill
 Barry (William B) Co (P O Box 63) Back Bay Annex Boston 17 Mass
 Barry Controls Div of Barry Wright Corp 700 Pleasant St Watertown 72 Mass

BARRYMOUNT—Barry Controls
 Bartlett Mfg Co 309 E Grand Blvd Detroit 2 Mich
 BARTRAP—Burns Corp
 Barth Corp 12650 Brookpark Rd Cleveland 30 Ohio
 Barth Stamping & Machine Works—see Barth Corp
 BASEDUCT—National Electric Div H K Porter Co
 Bashlin (W M) Co Bashlin Bldg Grove City Pa
 BASIC UNIT—Electro Lighting Corp
 BATTERY KEEPER—Rex Metal Craft Inc
 BATTERY SCOPE—Christie Electric Corp
 BAY-O-NET—R T & E Corp
 Bay-Tronic Co 43 Evergreen St Bayonne NJ
 BEACON RAY—Federal Sign & Signal Corp
 BEADS-IN-SLEEVES—Saxonburg Ceramics Inc
 BEAM-HUGGER—Round (David) & Son Inc
 BEAM JECTOR—Electro Lighting Corp
 BEAM-O-MATIC—U-C Lite Mfg Co
 BEAMSPOT—Amplex Corp
 BEAR—Behr-Manning Co
 BEAR-TEX—Behr-Manning Co
 BEAUTY TONE—Westinghouse Electric Corp Lamp Div
 Beaver-Advance Corp 12th & Factory Sts Ellwood City Pa
 Beaver Art Metal Corp—see Beaver-Advance Corp
 Beaver Pipe Tools Inc 310 Dana Ave N E Warren Ohio
 Becker Bros Carbon Co 3450 S Laramie Ave Cicero 50 Ill
 Becker Bros Electrical Corp—see Ther Electric & Machine Works
 Beckley Electric Co Inc 468-470 Grand Ave Brooklyn 38 NY
 BECO—Westinghouse Electric Corp
 Beede Electrical Instrument Co Inc Penacook NH
 Behr-Manning Co Troy NY
 Bel-Aqua Pool Supply Inc 750 Main St New Rochelle NY
 BELCAP—Sprague Electric Co
 BELCO—Bogue Electric Mfg Co
 BELCON—Bogue Electric Mfg Co
 BELBOND—Belden Mfg Co
 Belden Mfg Co P O Box 5070A Chicago 80 Ill
 BELDENAMEL—Belden Mfg Co
 BELDFOIL—Belden Mfg Co
 BELDONLITE—Stamford Metal Specialty Co Inc
 BELDSOL—Belden Mfg Co
 BELDOTHERM—Belden Mfg Co
 Bell Electric Co 5735 S Claremont Ave Chicago 36 Ill
 BELL LAMP—Mole-Richardson Co
 Bell Lumber & Pole Co 524 Midland Bank Bldg Minneapolis 1 Minn
 Bell Pole Co Ltd—see Bell Lumber & Pole Co
 Bell Sound Systems Inc 555 Marion Rd Columbus 7 Ohio
 Bellevue Industrial Furnace Co 2620 Crane Ave Detroit 14 Mich
 BELLOFRAM—General Control Co
 BELT-AIR—Buffalo Forge Co
 BELTA—Diamond Expansion Bolt Co Inc
 BEMAC—Electric Machinery Mfg Co
 Benbow Mfg Co—see Insul-8-Corp
 BENFID—ALINER—Steelclad Co
 BENFIELD—Steelclad Co
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky
 Benjamin Reel Products Inc 10700 Broadway Cleveland 25 Ohio
 Benson (Alexander R) Co Inc 2 Davis Rd New Hartford NY
 BERALOY—Driver (Wilbur B) Co
 Bergen Laboratories Inc 60 Spruce St Paterson 1 NJ
 Beror Machine Products Inc—see Electrical Tubular Products Inc
 Berko Electric Mfg Corp 182-20 Liberty Ave Jamaica 12 NY
 Berkshire Laboratories 11-33 Kingsford Rd Hanover NH
 Berkshire Transformer Corp Kent Conn
 BERMICO—Brown Co
 Bernard-Franklin Co Inc Frankford & Torresdale Aves Philadelphia 24 Pa
 Bernina Sewing Machine Co 29 W 35 St NY 1 NY
 Berns Air King Corp 3050 N Rockwell St Chicago 11 Ill
 Bernz (Otto) Co Inc 740 Driving Park Ave Rochester 13 NY
 BERNZ-O-MATIC—Bernz (Otto) Co Inc
 BERNZRITE—Bernz (Otto) Co Inc
 Bertram (Harvey P) Co 1439 Freeman Cincinnati Ohio
 BESTO-WIRE—Rhode Island Insulated Wire Co Inc
 Betts & Betts Corp Pomeroy Rd Woodbury Conn
 Beverly Shear Mfg Corp 3023 W 111 St Chicago 55 Ill
 BI-CAST—Bishop Mfg Corp
 BI-FLO—Aerovent Fan Co Inc
 BI-PRENE—Bishop Mfg Corp
 BI-SEAL—Bishop Mfg Corp
 Biddle (James G) Co 1316 Arch St Phila 7 Pa
 Biddle Trade Publishing Co 2720 Beverly Blvd Los Angeles 57 Calif
 BIFFUATOR—DeBothezat Fans Div
 BIG BEAM—U-C Lite Mfg Co
 BIG CHAMP—Champion DeArment Tool Co
 BIGLER—Self-Lifting Piano Truck Co
 Billings & Spencer Co 1 Laurel St Hartford 1 Conn
 Bin-Dicator Co 17190-212 Denver Detroit 24 Mich
 BIN-EYE—Jeffrey Mfg Co
 BIN-FLO—Bin-Dicator Co
 BIN-VUE—Controls Co of America
 Binks Mfg Co 3114 Carroll Ave Chicago 12 Ill
 Bios Laboratories Inc 17 W 60 St New York 23 NY
 Birdsell Mfg Co Inc—see Birdsell Products
 Birdsell Products 350 N Halstead Pasadena Calif
 Bishop Mfg Corp 10 Canfield Rd Cedar Grove NJ
 BLAC TAC—Hvsol Corp
 BLACK BEAUTY—Texas Creosoting Co

Black (M) Mfg Co 300-08 N Third St Phila 6 Pa
 Black & Decker Mfg Co Towson 4 Md
 BLACK LINE—Black (M) Mfg Co
 Blackburn (Jasper) Corp 1525 Woodson Rd St Louis 14 Mo
 Blackburn Specialty Co—see Biaco Mfg Co
 Blackhawk Industrial Div—see Blackhawk Industrial Products Co
 Blackhawk Industrial Products Co Butler Wis
 Blackhawk Industries 250 S Main St Dubuque Iowa
 Biaco Mfg Co 6541 Euclid Ave Cleveland 3 Ohio
 BLAK-RAY—Ultra-Violet Products Inc
 Bliss Electronic Corp Sussex NJ
 Blitz Electric Co 5713 Wentworth Ave Chicago 21 Ill
 BLO-FAN—Emerson-Pryme Co
 Blonder-Tongue Laboratories Inc 9 Ailing St Newark 2 NJ
 Blower (L R) Co—see Ripley Co Inc
 BLU-RED—Associated American Winding Machines Inc
 BLUE BONNET—Forston Co
 BLUE CHIP—Nelson Distributor Products Div
 BLUE CROSS—Hampton Mfg Co
 BLUE DIAMOND—Whitman & Barnes Div United Drill & Tool Corp
 Blue M Electric Co 138th & Chatham Sts Blue Island Ill
 BLUE-POINT—Snap-on-Tools Corp
 BLUE TOP—Westinghouse Electric Corp Lamp Div
 Bodendieck Tool Co P O Box 499 Taylorville Ill
 Bodine Electric Co 2500 W Bradley Pl Chicago 18 Ill
 Bogen (David) Co Inc—see Bogen-Presto Div
 BOGEN-PHONE—Bogen-Presto Div
 Bogen-Presto Div Siegler Corp Route 4 & Forest Ave (P O Box 500) Paramus NJ
 Boggs (Harold L) & Co 34 N Gore Ave St Louis 19 Mo
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ
 BOLT LOC—Barkelaw Electric Mfg Co
 BON-AIR—Arkton Products Co
 BON-E-CON—Bonney Dodge & Tool Works
 BONDEZE—Phelps Dodge Copper Products Corp
 Bonnell (Wm A) Co—see Bonnell Electric Mfg Co Inc
 Bonnell Electric Mfg Co Inc 192-194 Chambers St NY 7 NY
 Bonnell Electrical Specialties—see Bonnell Electric Mfg Co Inc
 Bonney Forge & Tool Works 2400 Rockhill Rd (North) Alliance Ohio
 Borden Co—see Beaver Pipe Tools Inc
 Borden Engineering Co—see Borden Engineering Div M J Johnson Aircraft Engineering Co
 Borden Engineering Div M J Johnson Aircraft Engineering Co Box 10 Morrisstown NJ
 BORNISIL—Westinghouse Electric Corp
 Borths (George C) Co Inc P O Box 115 East Rutherford NJ
 BOSS—Huenefeld Co
 Boston Gear Works 14 Hayward St Quincy 71 Mass
 Boston Woven Hose & Rubber Co—see American Blitrite Rubber Co
 Boston Woven Hose & Rubber Div
 Bound Brook Bearing Corp of America Bound Brook NJ
 Bound Brook Oil-Less Bearing Co—see Bound Brook Bearing Corp of America
 Bowers Battery & Spark Plug Co—see General Battery and Ceramic Corp
 Bowers Mfg Co Inc 6700 Avalon Blvd Los Angeles 3 Calif
 BOX-LOK—Metalelectrics Inc
 Boylan Lightning Protection Co Steubenville Ohio
 Brach Mfg Corp 200 Central Ave Newark 3 NJ
 Bradley Laboratories Inc—see Bradley Semiconductor Corp
 Bradley Semiconductor Corp 275 Welton St New Haven 11 Conn
 Brady (W H) Co 727 W Glendale Ave Milwaukee 9 Wis
 Bramco Inc College & South Sts Piqua Ohio
 Brand Dielectrics 902 Main St Williamstown Conn
 Brand (William) & Co Inc—see Brand-Rex Div
 Brand (William)—Rex Div—see Brand-Rex Div
 Brand-Rex Div American Enka Corp 51 Sudbury Rd Concord Mass
 Branham Marek & Duesner Inc—see B M D & R Inc
 BRASCOLITE—Guth (Edwin F) Co
 BRAZALLOY—All-State Welding Alloys Co Inc
 BRAZECLAD—American Silver Co Inc
 BREAKER-FUSE—General Electric Co
 BREEZE-AIR—Buffalo Forge Co
 BREEZE BUILDERS—Bar-Brook Mfg Co Inc
 BREEZO—Buffalo Forge Co
 Brewer Electric Mfg Co 5100 N Ravenswood Ave Chicago 40 Ill
 Brewer-Titchener Corp 111 Port Watson St Cortland NY
 Bridgeport Fittings Inc 209 Center St Bridgeport 2 Conn
 Bridgeport Hardware Mfg Corp Scofield Ave Bridgeport 5 Conn
 Bridgeport Switch Co—see Bridgeport Fittings Inc
 Briegel Method Tool Co 104 N E First St Galva Ill
 Bright Star Battery Co—see Bright Star Industries
 Bright Star Industries 600 Getty Ave Clifton NJ
 Bristol Motor Div Vocoline Co of America Inc
 Coulter St Old Saybrook Conn
 BROADSTREETER—Metalcraft Products Co Inc
 Broan Mfg Co Inc Hartford Wis
 BRONCO—Western Insulated Wire Co
 BRONCOLOR—Western Insulated Wire Co
 Bronze Bearings Inc 340 N Ave East Cranford NJ
 Brook Motor Corp 3302-4 W Peterson Ave Chicago 45 Ill
 BROOKS—Mine Safety Appliances Co
 Brooks Lumber Co P O Box 153 Bellingham Wash
 Brown Company 150 Causeway St Boston 14 Mass
 BROWN DEVIL—Ohmite Mfg Co

Brown Instrument Co—see Minneapolis-Honeywell Regulator Co Industrial Div
Brown Instrument Div—see Minneapolis-Honeywell Regulator Co Industrial Div
Brown Products Corp 1090 Springfield Rd Union NJ
Brown Wood Preserving Co 409 Commonwealth Bldg Louisville 2 Ky
BROWN-X—Pass & Seymour Inc
BROWNING—Potter & Rayfield Inc
Bruhn Steel Products Co 300 E Dunes Highway Chesterton Ind
Brunswick Instruments P O Box 813 New Brunswick NJ
BRUNT—Parr Mfg Corp
Brush Abee Inc—see Hawker Siddeley Brush Inc
Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn
Bryant Mfg Co 410 N Paulina St Chicago 22 Ill
BUBBLTROL—Automatic Control Co
Buchanan Electrical Products Corp 434 US Route 22 Hillside NJ
BUCKEYE—Gar Wood Industries Inc
BUCKEYE—Youngstown Sheet & Tube Co
Buckles (Chris) Inc 4830 S Hoyne Ave Chicago 9 Ill
BUDGETLITE—Ainsworth Lighting Inc
BUGDIT—Shaw-Box Crane & Hoist Div
Buffalo Forge Co 490 Broadway Buffalo 5 NY
Buffalo Machine Mfg Co 586 Tonawanda St Buffalo 7 NY
BUG-A-WAY—Westinghouse Electric Corp Lamp Div
BUG CHASER—Amplex Corp
Bugie (HH)—see Burndy Corp
BUGLITE—Tripp Mfg Co
Building Service Co 4923 18th Ave S Minneapolis 17 Minn
BUILT-IN-WATCHMEN—Westinghouse Electric Corp
BULL DOG—American Biltrite Rubber Co Boston
BULL DOG—Woven Hose & Rubber Div
BULL DOG—Marvel Lamp Co
BULLDOG—Nelson Distributor Products Div
Bulldog Div Gregory Industries Inc—see Nelson Distributor Products Div
Bulldog Electric of Denver—see Young Electric & Mfg Co Inc
Bulldog Electric Products Co—see I-T-E Circuit Breaker Co
Bulldog Electric Products Div
BULLS-I-UNIT—Kirkland (W R) Co
BULLY—Weil Expansion Products Inc
Bunnell (G F) Co—see Atlantic Engravers Inc
Bunting Brass and Bronze Co 715 Spencer St Toledo 1 Ohio
Burbank Electrical Products 215 W Palm Ave P O Box 7 Burbank Calif
BURCAP—Burndy Corp
Burgess Battery Co Handi Craft Div—see Burgess Vibrocrafters Inc
Burgess Battery Co Freeport Ill
Burgess Vibrocrafters Inc Grayslake Ill
Burling Instrument Co Inc 26 River Rd Chatham NJ
Burndy Corp Norwalk Conn
Burndy Engineering Co—see Burndy Corp
Burnley Battery & Mfg Corp 103 Clay St (P O Box 511) North East Pa
Burns (James F) Co 1601 Industrial Highway Pennsauken NJ
Burr Aluminum Products Div—see Keyes-Davis Co
Burt Mfg Co 936 S High St Akron 11 Ohio
Burton Mfg Co 2520 Colorado Ave Santa Monica Calif
Burton-Rogers Co—see Hoyt Electrical Instrument Works Inc
Busada Mfg Corp 32-21 Downing St Flushing 54 NY
Bush Transformer Corp 707 North St Endicott NY
BUSS—Bussmann Mfg Div McGraw-Edison Co
Bussmann Mfg Div McGraw-Edison Co University at Jefferson St Louis 7 Mo
BUSTER—Lidseon of North Carolina Inc
BUSTRICTION—I-T-E Circuit Breaker Co
Bulldog Electric Products Div
BUTTING—Burndy Corp
BUZABEL—Edwards Co Inc
BUZACALL—Edwards Co Inc
Byers Co Clark Bldg Pittsburgh 30 Pa
BYTAP—Burndy Corp

C

C & B Engineering and Fabricating Corp P O Box 8701 Houston Tex
CBC Electronics Co Inc 2601 N Howard St Philadelphia 33 Pa
CCA—Coil Co of America Inc
C-CORE—Century Lighting Inc
C & D Batteries Div Electric Autolite Co Washington & Cherry Sts Conshohocken Pa
CDC—Crown Die Casting Corp
CDM—Curtis Development & Mfg Co
C&E—Erisson Mfg Co
CFI—Day-Brice Lighting Inc
C-H—Cutler-Hammer Inc
C-1 BOARD—Century Lighting Inc
C-J-R—Metropolitan Electric Mfg Co
C-LECTOR—Century Lighting Inc
C-L-X—Simplex Wire & Cable Co
CM—Chicago Miniature Lamp Works
CM—Chisholm-Moore Hoist Div Columbus McKinnon Corp
CMG Industries—see Ideas Inc
CNM—Conduit Nipple Mfg Co

COM—Wing (L J) Mfg Co
C-Q-T—Chase-Shawmut Co
C & S Products Co Windsor Locks Conn
CVR—Cincinnati Time Recorder Co
C & W Sales Co—see Clark (George P) Div Cragin & Wilkins Co Inc
CWC Corp—see Crozier Machine Tool Co
CABINETROL—General Electric Co
CABLE-AIRE—Round (David) & Son Inc
CABLE BASKET—Chalfant Products Co Inc
Cable Electric Products Inc 234 Daboll St Providence 7 RI
CABLE KING—Yale & Towne Mfg Co
CABLE TRACER—Amprobe Instrument Corp
CABLE TRUSS—Chalfant Products Co Inc
CABLEMATIC—Will-Son Mfg Co
CABLERACK—Chalfant Products Co Inc
CABLERAY—Sair Corp
CABLETRAY—Chalfant Products Co Inc
CABLETROF—P-W Industries Inc
CABLETROUGH—Chalfant Products Co Inc
CABLEX—Collier Insulated Wire Co
CADDY—Erico Products Inc
CADET—Guth (Edwin F) Co
CADET—Linemaster Switch Corp
CADILLAC—Clements Mfg Co
CADILLAC—Waveland Electric Co
CADIZ—U S Electric Motor Co
CADWELD—Erico Products Inc
CALCORD—Electric Cords & Supply Corp
CALCULITE—Lightoller Inc
Califone Corp—see Rheem Califone Corp
CALK-INS—Rawplug Co Inc
Calpa Products Co 5420 Paschall Ave Phila 43 Pa
CALROD—General Electric Co
CALSON BRONZE—Anaconda Wire & Cable Co
CALTROL—Caltron Products Co
Caltron Co—see Caltron Products Co
Caltron Products Co 3518 W Pico Blvd Los Angeles 19 Calif
Calumet Plastics Inc 11201 S Cottage Grove Ave Chicago 28 Ill
Calvert Co 19851 Ingersoll Dr Rocky River 16 Ohio
Cam-Lok Div Empire Products Inc 9213 Blue Ash Rd Cincinnati 42 Ohio
CAM-VAR—Electrical Technical Products Div
Camlock Corp 825 Bronx River Ave New York 72 NY
CAMBRICOID—American Electric Cable Co
CAMEO—Rodale Mfg Co Inc
Can Arm Corp P O Box 156 Champlain NY
CANCELLATOR—Annis (B) Co
CANDELITE—Duro-Test Corp
CANDLE-FLAME—Luxor Lighting Products Inc
CANDLEFLAME—North American Electric Lamp Co
CANDYLBEME—North American Electric Lamp Co
Canning-Pekara Inc 2144 N Wood St Chicago 14 Ill
Cannon Electric Co 3208 Humboldt St Los Angeles 31 Calif
Cannon Electric Development Co—see Cannon Electric Co
CANSEAL—Cannon Electric Co
CAPAC—Engelhard Industries Inc
CAPACOHMETER—Simpson Electric Co
CAPCO—Capitol Stage Lighting Co Inc
CAPCOLITE—Capitol Stage Lighting Co Inc
Capewell Mfg Co 60-70 Governor St Hartford 2 Conn
CAPILLARY—Air & Refrigeration Corp
Capitol Lighting Protection Co Inc Box 102 Raleigh N C
Capitol Hardware Mfg Co Inc 400 N Leavitt St Chicago 11 Ill
Capitol Stage Lighting Co Inc 527 W 45 St New York 36 NY
CAPOX—Subox Inc
CAPRI—Frigid Inc
CAPRI—Swiveler Co Inc
CAPRI—Wiss (J) & Sons Co
CAPTIVOLT—Vickers Inc
CARAVEL—Benjamin Div
CARBI-TWIST—U S Expansion Bolt Co
Carboline Co 32 Hanley Industrial Ct St Louis 17 Mo
Carbolineum Wood Preserving Co 6683 N 40 St Milwaukee 9 Wis
CARBOLON—Carbone Corp
CARBOLUBE—Carbone Corp
CARBOMITE—Continental-Wirt Electronics Corp
Carbon Engineering Corp P O Box 256 Slinger Wis
Carbone Corp 400 Myrtle Ave Boonton NJ
CARENCO—Carbon Engineering Corp
CARGOLITE—Stebber Div Pyle-National Co
Carlon Products Corp P O Box 133 Aurora Ohio
Carney (B J) & Co 326 Peyton Bldg Spokane 8 Wash
Carol Cable Co 190 Middle St Pawtucket RI
CAROPRENE—Carol Cable Co
Carpenter Mfg Co 2250 Gilman Square Somerville 45 Mass
Carrier Corp Carrier Parkway Syracuse 1 NY
Carter Motor Co 2711 W George St Chicago 18 Ill
CARTON—Self-Lifting Piano Truck Co
CARTRIJ-DRY—Pyramid Electric Co
Case (J I) Co Racine Wis
Castle Engineering Co P O Box 35 Seneca Castle NY
Castle Hills Corp—see Hartzell Propeller Fan Co
CASTOMATIC—Federated Metals Div American Smelting & Refining Co
CATALINA—Benjamin Division (Thomas Industries Inc)
CATALINA—Industrial Lamp Corp
CATALINA—Swiveler Co Inc
CATARACT—Ajax Electric Co
Caterpillar Tractor Co Industrial Engine Plant Peoria Ill
Catholic Protection Service 4601 Stanford St Houston Tex

Catholics Inc—see Cold Cathode Lighting Corp
CAVALIER—Wakefield Lighting Div
Cavalier Air Conditioning Co—see Forston Co
Cavalier Corp Electric Heating Div 343 W First St Chattanooga Tenn
Ceco Steel Products Corp 5601 W 26 St Chicago 50 Ill
CEETEE—Crescent Tool Co
CEFCO—Commercial Enclosed Fuse Co of NJ
CEILCELL—United Lighting & Ceiling Co
CEILGLD—United Lighting & Ceiling Co
CEILGRID—United Lighting & Ceiling Co
Ceilheat Div Homes Inc—see Ceilheat Inc
Ceilheat Inc 5212 Homborg Drive (P O Box 10066) Knoxville Tenn
Ceiling Materials Co—see L & P Lighting
Ceiling Materials Co 200 Waring Rd Memphis 17 Tenn
CEILITE—United Lighting & Ceiling Co
CEILO—Gibson Mfg Co
CELLUME—United Lighting & Ceiling Co
CELENAMEL—Belden Mfg Co
CELOMATIC—Scranton Storage Battery Corp
CELORON—Continental-Diamond Fibre
CEMCO—Connecticut Electric Mfg Co
CEN TRI CORE—Alpha Metals Inc
CEMCO—Central Scientific Co
CENTAWATT—Wesix Electric Heater Co
Central Electric Co Fulton Mo
Central Neon Co—Centralite Co Inc
Central Porcelain Co 507 Railroad St Columbiana Ohio
Central Scientific Co 1700 Irving Pk Rd Chicago 13 Ill
Central Station Signals Inc 53 W 23 St New York 10 NY
Central Transformer Co 900 W Jackson Blvd Chicago 7 Ill
Central Transformer Corp P O Box 1753 Pine Bluff Ark
Centralite Co Inc Dayton & Central Aves Cincinnati 14 Ohio
Centre Lighting Fixture Mfg Co Inc—see Project Fixture Mfg Corp
CENTRILINE—Westinghouse Electric Corp Sturtevant Div
CENTRAL-VENT—Lau Blower Co
CENTROL—Nelson Electric Mfg Co
CENTRON—Sunbeam Lighting Co
Century Electric Co 18th & Pine Sts St Louis 3 Mo
Century Lighting Inc 521 W 43 St New York 36 NY
CERAMAGNET—Stackpole Carbon Co
Ceramic Specialties Co—see Lint (Glyde W)
CERTAIN CURTAIN—Hayes (C I) Inc
Certified Ballasts Mfrs—see Fleur-O-Lier Mfrs
Certified Fleur-O-Lier Mfrs—see Fleur-O-Lier Mfrs
Chadsey Corp P O Box 1858 Hartford 1 Conn
Chadsey Mfg Co Inc—see Chadsey Corp
Chain Belt Co 4701 W Greenfield Ave Milwaukee 1 Wis
CHAIN MATE—Radix Wire Co
CHAIN-O-LITE—House-O-Lite Corp
Chalfant Products Co Inc 11525 Madison Ave Cleveland 2 Ohio
CHALKBOARD—Solar Light Mfg Co
CHALLENGE—Keyes-Davis Co
CHALLENGER—Bogen-Presto Div
CHALLENGER—Coffing Hoist Div Duff-Norton Co
CHALLENGER—Hyster Co
Chamorr Mfg Corp 43-63 11th St Long Island City 1 N Y
CHAMPION—Turner Brass Works
CHAMPION—Winpower Mfg Co
Champion DeArment Tool Co South Main St Meadville Pa
Champion Lamp Works 330 Lynnway Lynn Mass
Champion Mfg Co—see Winpower Mfg Co
Chance (A B) Co 210 N Allen St Centralia Mo
Chandeyson Electric Co 4084 Bingham Ave St Louis 16 Mo
CHANGE-A-CYCLE—Carter Motor Co
CHANGE-A-VOLT—Carter Motor Co
CHANGE-OUT—Joy Mfg Co
CHANNEL-DUCT—Glasic Corp
Channel Master Corp Ellenville NY
CHANNELITE—Swiveler Co Inc
CHANNELLOCK—Champion DeArment Tool Co
Chapin (Chas E) Co Inc 227 Fulton St NY 7 NY
Chapman (PE) Electrical Works Inc 1820 Chouteau Ave St Louis 3 Mo
CHARCO—Charleston Rubber Co
CHARGE-O-WATIC—Kearfoot Div
CHARGAMATIC—Electric Cord Co
CHARGE CONTROL—Exide Industrial Marketing Div
CHARGICATOR—Nickol Electrical Instrument Co
Charles Machine Works Inc P O Box 66 Perry Okla
Charleston Rubber Co Stark Industrial Park Charleston SC
CHASBESTOS—Chase & Sons Inc
CHASE—Thomas & Betts Co
Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn
Chase & Sons Inc 19 Highland Ave Randolph Mass
CHASEFIL—Chase & Sons Inc
CHASE-KOTE—Chase & Sons Inc
CHASE-MOLD—Chase & Sons Inc
CHASE PRIME—Chase & Sons Inc
Chase-Shawmut Co 374 Merrimac St Newburyport Mass
CHASE WRAP—Chase & Sons Inc
CHEERLIGHT—Aerolux Light Corp
Chelsea Fan and Blower Co 639 South Ave Plainfield NJ
CHEM-MARINE—Hubbell (Harvey) Inc
Chemalloys Electronics Corp Gillespie Field Santee Calif

Cherry Electrical Products Corp 1650 Deerfield Rd
Highland Park Ill

Chesflex Corp 684 Nepperhan Ave Yonkers NY

Chester Cable Corp Oakland Ave Chester NY

Chester Hoist Div National Screw & Mfg Co Lisbon
Ohio

Chester Mfg Co—see Chester Hoist Div National Screw
& Mfg Co

CHICAGO—Klein (Mathias) & Sons

CHICAGO—Lidseen of North Carolina Inc

Chicago Blower Corp 9867 Pacific Ave Franklin Park
Ill

Chicago Commutator Inc Wheeling Rd & Exchange Ct
Wheeling Ill

Chicago Decal Co 3310 Elston Ave Chicago 18 Ill

Chicago Decalcomania Co—see Chicago Decal Co

Chicago Die Casting Mfg Co 2510-14 W Monroe St
Chicago 12 Ill

Chicago Expansion Bolt Co 1338 W Concord Pl
Chicago 22 Ill

Chicago Metal Hose Corp—see Flexonics Div

Chicago Miniature Lamp Works 1500 N Ogden Ave
Chicago 10 Ill

Chicago Pneumatic Tool Co 6 E 44 St NY 17 NY

Chicago Roller Skate Co—see Ware Fuse Corp

CHICAGO-SIGNAL—Couch (SH) Co Inc

Chicago Tubing & Braiding Co—see Flexonics Div

Chicago Wire Iron & Brass Works 2411 W Belmont
Ave Chicago 18 Ill

CHIEF—Collins Machinery Corp

CHILCO—Chicago Miniature Lamp Works

CHILL AIR—National Engineering & Mfg Co

CHINALAK—Dolph (John C) Co

Chisholm-Moore Hoist Corp—see Chisholm-Moore Hoist
Div Columbus McKinnon Corp

Chisholm-Moore Hoist Div Columbus McKinnon Corp
6072 Fremont Ave Tonawanda NY

CHLOREXTOL—Allis-Chalmers Mfg Co

CHLOROLUX—Luxor Lighting Products Inc

CHRODETTE—Edwards Co Inc

Christie Electric Corp 3410 West 67 St Los Angeles
43 Calif

CHROMALOX—Wiegand (Edwin L) Co

CHROME-X—Pass & Seymour Inc

CHRONISTER—Bergen Laboratories

CHRONO-SPRAY—Paragon Electric Co Inc

CHRONO-TEMP—Paragon Electric Co Inc

Chronoflash Co Oakdale Pa

CHRYSLER AIRTEMP—Airtemp Div Chrysler Corp

CINCH—National Lead Co

Cincinnati Clock & Instrument Co 1117 Harrison
Ave Cincinnati 14 Ohio

Cincinnati Time Recorder Co 1733 Central Ave
Cincinnati 14 Ohio

CINELITE—Mole-Richardson Co

CINTRIDE—Newage Industries Inc

CIRCA-LITE—Stern Industries

CIRCARB—Circle Wire & Cable Corp

Circle A-W Products Co—see Alwalt Mfg Co

Circle Air Industries Inc 244 Herkimer St Brooklyn
16 NY

Circle Air Products Inc—see Circle Air Industries Inc

CIRCLE B—Bristol Motor Div Vocaline Co of Ameri-
ca Inc

CIRCLE D—Natale Machine & Tool Co

Circle F Mfg Co 720 Monmouth St Trenton 4 NJ

CIRCLE L—Lew Electric Fittings Co

Circle Wire & Cable Corp 5500 Maspeth Ave
Maspeth LI NY

Circlelite Corp—see House-O-Lite Corp

CIRCLELUX—Pfaff & Kendall

CIRCLEMOLD—Circle Wire & Cable Corp

CIRCLESHEATH—Circle Wire & Cable Corp

CIRCLITROL—Electrical Mfg Co

CIRCLGRID—Wilson (J A) Lighting

CIRCLINE—Sun-Lite Mfg Co

CIRCLOC—Circle Wire & Cable Corp

CIRCLOK—Circle F Mfg Co

CIRCUIT-SWITCHER—S & C Electric Co

CIRCUITROL—Continental Electric Equipment Co

CIRCULAR—Kisco Co Inc

Circulators Devices Mfg Corp—see Frigid Inc

CIRCULITE—Lightolier Inc

CIRFLEX—Circle Wire & Cable Corp

CIRKLAIR—Folsom Co Inc

CIRTEX—Circle Wire & Cable Corp

CIRTUBE—Circle Wire & Cable Corp

CIRTUF—Circle Wire & Cable Corp

Clarage Fan Co Kalamazoo Mich

Clare (C P) & Co 3101 Pratt Blvd Chicago 45
Illinois

CLAREMONT—Lightolier Inc

Clark (George P) Div Cragin & Wilkins Co Inc Fitch-
burg Mass

Clark Controller Co 1146 E 152 St Cleveland 10
Ohio

CLARRED—Clare (C F) & Co

CLASSIC—Carter Motor Co

CLEAN-FLD—Allis (Louis) Co

CLEAN-O-MATIC—Siebring Mfg Co

CLEAN RAY—Infra Corp

Clean Sweep Co—see Jogan Industries

CLEAR-SELE—Rust-Oleum Corp

CLEARSITE—Economy Fuse Div

CLEARTEX—Day-Brite Lighting Inc

Clement Electric Co 223 Erie St N W Grand Rapids
2 Mich

Clement Industrial Electric Co—see Clement Electric
Co

Clements Mfg Co 6650 S Narragansett Ave Chicago
38 Ill

Cleveland Electric Motor Co 5213 Chester Ave Cleve-
land 3 Ohio

Cleveland Switchboard Co 2925 E 79 St Cleveland
4 Ohio

Cleveland Trencher Co 20100 St Clair Ave Cleve-
land 17 Ohio

Cleveland Worm & Gear Div Eaton Mfg Co 3300
E 80 St Cleveland 4 Ohio

CLIM-TROL—Welltron Co

CLICK DIAL—Penn Controls Inc

CLICK-ON—Electrical Fittings Corp

Clifton Conduit Co 3300 Eastbourne Ave Baltimore
24 Md

Clifton Mfg Co Inc 34 Topalian St Mattapan
Boston 26 Mass

CLIMATE CHANGER—Trane Co

CLIMATROL—Mueller Climatrol

CLIMAX—Glade Mfg Co

CLIPPER—Benjamin Div

CLIPPER—General Controls Co

CLIPPER—Linemaster Switch Corp

CLIPPER—Walker Brothers

Clipper Mfg Co 2800 Warwick Kansas City 8 Mo

CLORINOL—Sprague Electric Co

CLOSED-BACK—U S Expansion Bolt Co

CLUSTER-LITE—Revere Electric Mfg Co

Coates Electric Mfg Co 3419-11th Ave S W Seattle
4 Wash

COBANIC—Driver (Wilbur B) Co

COBENIUM—Driver (Wilbur B) Co

COCD—Coil Co of America Inc

CODE-CALL—Wheelock Signals Inc

Code Corp 4566 Baker St Philadelphia 28 Pa

Code Development Co—see Code Corp

Code Equipment Sales Co—see Code Corp

Code Products Corp—see Code Corp

COFFEE-HOT—Supreme Electric Products Co

Coffing Hoist Co—see Coffing Hoist Div Duff-Norton Co

Coffing Hoist Div Duff-Norton Co P O Box 1719
Charlotte 1 NC

COHRFOAM—Connecticut Hard Rubber Co

COHRLASTIC—Connecticut Hard Rubber Co

Cohn Electronics Inc Kin Tel Div 5725 Kearney Villa
Rd San Diego 12 Calif

Coil Co of America Inc 207-209 Washington St
Northvale NJ

COIL-FLEX—Ideal Industries Inc

COL-O-LUM—Stetson Mfg Co

Cold Cathode Corp—see Cold Cathode Lighting Corp

Cold Cathode Lighting Corp 76 S Bayles Ave Port
Washington NY

COLDCOTE—Anaconda Wire & Cable Co

Cole (C W) & Co Inc P O Box 3382 Los Angeles 54
Calif

Cole Electric Products Co—see Federal Pacific

COLLECTRIC—Industrial Electric Reels Inc

Collins Machinery Corp 955 Monterey Pass Rd Mon-
terey Park Calif

Collyer Insulated Wire Co 100 Hingston Ave Lin-
coln RI

Colonial Electric Products Div Colonial Neon Co Inc
1-115 Market St East Paterson NJ

COLOR-KEYED—Thomas & Betts Co

COLORBEAM—Amplex Corp

COLORFLAME—Luxor Lighting Products Inc

COLORLUX—Luxor Lighting Products Inc

COLORSCOPE—Simpson Electric Co

COLORSTONE—Jay Lighting Mfg Co Inc

COLORTONE—Westinghouse Electric Corp Lamp Div

COLORVOLT—Sola Electric Co

COLOVOLT—Poliak Luminescent Corp

COLUMBIA—National Steel Construction Co

Columbia Cable & Electric Corp 255 Chestnut St
Brooklyn 8 NY

Columbia Electric Mfg Co 4519 Hamilton Ave Cleve-
land 14 Ohio

Columbia Electric Mfg Co 275 Stewart St San
Francisco 5 Calif

Columbia Electric & Mfg Co—see Columbia Lighting

COLUMBIA-FLEX—Columbia Cable & Electric Corp

Columbia Industries Inc—see Columbia Products Inc

Columbia Lighting North 2310 Fancher Way Spokane
Wash

Columbia Metal Box Co—see Columbia Metal Products
Co

Columbia Metal Products Co 260 E 143 St New
York 51 NY

Columbia Products Inc Wrightsville Pa

COLUMBIA-QUALITY—Columbia Metal Products Co

Columbia Wire & Supply Co 2850 Irving Park Rd
Chicago 18 Ill

COLUMBUS—Conduit Pipe Products Co

Com-Pak-Ett Mfg Corp 650 Grand St Allegan Mich

Comar Electric Co 3349 W Addison Chicago 18 Ill

COMBI—Wodack Electric Tool Corp

COMET—Kent Co Inc

COMET—Standard Electric Co Inc

Comet Lamp Co 5 E 35 St New York 16 NY

COMFO—Mine Safety Appliances Co

COMFORT-AIRE—Heat Controller Inc

COMFORT CONTROL—Controls Co of America

COMMAIRE—Vocaline Co of America

COMMANDER—Anthony Lighting Corp

COMMANDER—Sensitive Research Instrument Corp

Commercial Enclosed Fuse Co of NJ 6812 Polk St
Guttenberg NJ

Commercial Reflector & Mfg Co 3109 Maple Ave Los
Angeles 11 Calif

COMMERCIALAIRE—Frigid Inc

Commercialaire Corp of America 840 E 98 St Brook-
lyn 36 NY

COMMERCIALITE—Commercial Reflector & Mfg Co

COMMISSIONER—Modern Light Co Inc

COMMODORE—Wakefield Lighting Div

COMMUNICAL—Faraday Inc

COMMUNICATOR—Godfrey Mfg Co

COMMUNO-PHONE—Bogen-Presto Div

COMPACT—General Cable Corp

COMPACT—Linemaster Switch Corp

COMPACT TROFFER—Metalcraft Products Co Inc

Compco Corp 1800 N Spaulding Ave Chicago 47 Ill

COMPETITION—Bramco Inc

COMPO—Bound Brook Bearing Corp of America

COMPOUND LEVER—Bartlett Mfg Co

COMPRESSO—Olin Conductors

COMPRESTOWELD—Olin Conductors

CON-FER-PHONE—Simpson (Mark) Mfg Co Inc

Conant Laboratories Box 3997 Bethany Station
Lincoln 5 Neb

CONCEALITE—Marchand (A) Inc

CONCENTROL—Continental Electric Equipment Co

Concrete Engineering Co—see Ceco Steel Products
Corp

CONDEX—Simplex Wire & Cable Co

Condit-Lite Corp 889 Broadway New York 3 NY

CONDIT—Allis-Chalmers Mfg Co

CONDOR—Raybestos-Manhattan Inc

CONDU-MATIC—Chamom Mfg Corp

CONDUCTO-LUBE—Cool-Amp Co

Condufor Corp 13560 Lorain Ave (P O Box 2748)
Cleveland 11 Ohio

CONDUIT OF COLUMBUS—Conduit Pipe Products Co

Conduit Nipple Mfg Co 1455 Spring Garden Ave
Pittsburgh 12 Pa

Conduit Pipe Products Co 157 W Fulton St Co-
lumbus 16 Ohio

CONDULET—Crouse-Hinds Co

CONFERENCE-TALK—Simpson (Mark) Mfg Co Inc

CONIC—Hilti Inc

Connecticut Electric Mfg Co Main St Bantam Con-
necticut

Connecticut Hard Rubber Co 407 East St New
Haven 9 Conn

CONNECTO-BLOCK—Thomas & Betts Co

CONPITT—Conduit Nipple Mfg Co

CONROD THE CONTROL—Dixie Controller Inc

CONS-O-LARM—Kilde Ultrasonic & Detection Alarms
Div Walter Kilde & Co Inc

CONSOLAIRE—Remington Corp

Consolidated Pipe Co of America 1530 Commerce Dr
Stow Ohio

CONSTANT-FLOW—Blue M Electric Co

CONSTITUTION—Trindl Products Ltd

CONTINENTAL—Crane (H W) Co

CONTINENTAL—Globe Lighting Products Inc

CONTINENTAL—National Steel Construction Co

Continental Carbon Inc—see Continental-Wirt Elec-
tronics Corp

Continental-Diamond Fibre Newark Del

Continental Electric Co 1234 S Prairie Ave (P O
Box 895) Hawthorne Calif

Continental Electric Co Inc 325 Ferry St Newark 5
NJ

Continental Electric Equipment Co Box 1055 Cincin-
nati 1 Ohio

Continental Radiant Glass Heating Corp 4 W 40 St
New York 18 NY

Continental Wire Corp P O Box 366 Wallingford
Conn

Continental-Wirt Electronics Corp 26 W Queen Lane
Philadelphia 44 Pa

CONTOURAMA—Dixie Controller Inc

CONTRA-DYNE—Square D Co Electric Controller &
Mfg Div

CONTRA-TORQUE—Square D Co Electric Controller &
Mfg Div

CONTROL-FLEX—Tapeswitch Corp of America

Control-Lite Corp—see Robert Mfg Co

Control Panel Corp 4431 W Division St Chicago 51
Ill

Control Switch Div Controls Co of America 4218-30 W
Lake St Chicago 24 Ill

CONTROLARC—Vickers Inc

CONTROL-LEAD—Marathon Special Products Corp

CONTROLENS—Holophane Co Inc

CONTROLETTE—Ward Leonard Electric Co

CONTROLITE—Line Material Industries

CONTROLITE—Ward Leonard Electric Co

CONTROLMAX—Sangamo Electric Co

Controls Co of America 2450 N 32 St Milwaukee 45
Wis

Controls Co of America Control Switch Div 1420
Delmar Dr Folcroft Pa

CONVERS-O-CALL—Adcrafters Co

CONVERT-A-FRONT—General Indicator Corp

CONVERT-A-LITE—Swissler Co Inc

CONVERT-FUSE—General Electric Co

Cook's Son (Adam) Inc 5 N Stiles St Linden NJ

Cool-Amp Co 8603 W 17 Av Portland 19 Ore

COOL-CIRCLE-ATOR—Kisco Co Inc

Cool-ette Inc 7535 W 8 Mile Rd Detroit 21 Mich

COOL-SPOT—Signal Electric Div King-Seely Corp

COOLAIR—American Coolair Corp

Cooler Div—see McGraw-Edison Co

COOLERO—Hirschman-Pohle Co Inc

COOLINE—Ohio Brass Co

COOLSHIELD—Lincoln Electric Co

Cooper (D C) Co 1467 S Michigan Ave Chicago 5
Ill

Copier Hewitt Electric Co Inc 720-732 Grand St
Hoboken NJ

Co-operative Utilities Co Inc 4637-39 Mulberry St
Phila 24 Pa

COPACO—Cottrell Paper Co Inc

COPALM—Cottrell Paper Co Inc

Cope (T J) Div Rome Cable Corp Third & Walnut Sts
Collegeville 5 Pa

COPING-LITE—Magni Flood Inc

COPPERFORM—Boggs (Harold L) & Co

COPPERPLY—National-Standard Co

COPPERTONE—Globe Lighting Products Inc

Copperweld Steel Co Wire and Cable Div Glassport
Pa

Coppus Engineering Corp 344 Park Ave Worcester 10
Mass

CORALITE—Modern Light Co Inc

Corbunum Co—see Globar Plant

Cordomatic Corp 1724 W Indiana Ave Philadelphia
32 Pa

CORDON—I-T-E Circuit Breaker Co

CORE BORE—Equipment Corp of America

CORE-O-MATIC—Induction Heating Corp

CORE VENT—Super Tool Co

CORE-VENT—U S Expansion Bolt Co
Cornell-Dubilier Electric Corp—see Cornell-Dubilier Electronics
Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ
Corning Glass Works Corning NY
Corning Wire Co 50 Church St New York 17 NY
Corona Equipment Co Inc—see Corona Mfg Corp
Corona Mfg Corp 11300 Tuxford St Sun Valley Calif
CORONADO—Benjamin Div
CORNET—Jay Lighting Mfg Co Inc
COROPRENE—Cornish Wire Co
COROPREX—Cornish Wire Co
COROX—Westinghouse Electric Corp
COROLINE—Day-Brite Lighting Inc
CORPAK—Square D Co
CORRALUME—Day-Brite Lighting Inc
CORRECTOLITE—Holophane Co Inc
CORRIB—Ohmite Mfg Co
CORRIDOR-LITE—House-O-Lite Corp
CORRU-LUMINUS—Luminous Ceilings Inc
COSAIR—Scranton Storage Battery Corp
CORVEL—Polymer Corp
Cory Corp 3200 W Petersen Ave Chicago 45 Ill
COTENAMEL—Beiden Mfg Co
Cottrell Paper Co Inc 10 Purchase St Fall River Mass
COUCH-CALL—Couch (S H) Co Inc
Couch (S H) Co Inc 3 Arlington St North Quincy 71 Mass
Counter and Control Corp—see Precision Products & Controls Inc
COUNTER-FLO—Electrend Products Corp
COUNTER-FLOW—Blue M Electric Co
COUNTERPOINT—Swivelier Co Inc
COVERLITE—Stieber Div Pyle-National Co
Cox and Co Inc 115 E 23 St New York 10 NY
COZY GLOW—Westinghouse Electric Corp
CRADLECLIP—Electrovert Inc
CRAFT LITE—Paramount Industries Inc
CRAFTRITE—Ugar Electric Tools
CRAFTSCOPE—Waterman Products Co Inc
CRAFTSMAN—Swing-O-Lite Inc
CRAFTSMEN—Tevco Insulated Wire
Cramer (R W) Co—see Cramer Div
Cramer Controls Corp—see Cramer Div
Cramer Div Giannini Controls Corp Old Saybrook Conn
Crane (H W) Co 15 N 9th Ave Maywood Ill
CRANELITE—Holophane Co Inc
CraneVeyor Corp 1240 S Boyle Ave Los Angeles 23 Calif
CRESCENT—Barksdale Valves
CRESCENT—Wheeler Reflector Co
Crescent Insulated Wire Cable Co 319 N Olden Ave Trenton 5 NJ
Crescent Mfg Co 785 Schuykill Ave Philadelphia 46 Pa
Crescent Plastics Inc 955 Diamond Ave Evansville 7 Ind
Crescent Tool Co 200 Harrison St Jamestown NY
CRESCORD—Crescent Insulated Wire & Cable Co
CRESFLEX—Crescent Insulated Wire & Cable Co
CRESLINE—Crescent Plastics Inc
Crest Transformer Corp 1834-36 W North Ave Chicago 22 Ill
CRESTBRITE—Crest Transformer Corp
CRESTEX—Day-Brite Lighting Inc
CRESTOLOY—Crescent Tool Co
CRESTRAN—Crest Transformer Corp
CRESTROL—Crest Transformer Corp
CRESYNTHOL—Crescent Insulated Wire & Cable Co
CRIMCUT—Vaco Products Co
CRIMPEE—Cannon Electric Co
CRIMPIT—Burndy Corp
Cris Controls Div—see Acro Div Robertshaw-Fulton Controls Co
Crittenden Transformer Works Inc 13011 S Spring St Los Angeles 61 Calif
CRODRUMS—Perfecite Co
Crouse-Hinds Co Syracuse 1 NY
CROWN—Miller Co
Crown Die Casting Corp 752 S Third Ave Mount Vernon NY
Crown Industrial Products Co 713 Amsterdam St Woodstock Ill
CROWN LINE—Westinghouse Electric Corp Lamp Div
CROWNITE—Luxe Lamp Corp
Crownlite Fluorescent Co 7 Roselle St Mineola NY
Crozier Machine Tool Co 684 N Prairie Ave Hawthorne Calif
Crucible Steel Co of America Box 88 Pittsburgh 30 Pa
CRYOLYTIC—Safe-T-Mike Corp
CRYSTAL—Royal Electric Corp
CRYSTAL VALVE—Delta-Star Electric Div
CRYSTALLIER—Duro-Test Corp
CRYSTALUX—Luxor Lighting Products Inc
CRYSTOPAL—Corning Glass Works
CUAL-AID—Penn-Union Electric Corp
CUBECCELL—United Lighting & Ceiling Co
Cummins-Chicago Corp—see Cummins Portable Tools Div John Oster Mfg Co
Cummins Portable Tool Div John Oster Mfg Co 5055 N Lydell Ave Milwaukee 17 Wis
CUPSON—Driver (Wilbur B) Co
CURICULUME—Neo-Ray Products Inc
Curlee (W F) Mfg Co P O Box 776 Houston 1 Tex
Curran Engineering Co—see So-Cal Electro Products Inc
CURRENTROL—Lincoln Electric Co
CURTAIN OF LIGHT—Electronic Control Corp
CURTICELL—Curtis Lighting Div
Curtis Development & Mfg Co 3244 N 33 St Milwaukee 16 Wis
Curtis Lighting Div Curtis-All Brite Lighting Inc 6135 W 65 St Chicago 38 Ill
Curtis Lighting Inc—see Curtis Lighting Div

Curtis Mfg Co Refrigeration Div 1905 Kienlen Ave St Louis 20 Mo
CURTISTRIP—Curtis Lighting Div Curtis-All Brite Lighting Inc
CURVACORE—Allis-Chalmers Mfg Co
CURVETTE—Stieber Div Pyle-National Co
Curvite Surgical Products Co—see Mastcraft Medical & Industrial Corp
CUSHION GRIP—Bridgeport Hardware Mfg Corp
Custom Component Switches Inc 3137 Kenwood St Burbank Calif
CUSTOM LINE—White-Rodgers Co
CUSTOM-TEN—Simpson (Mark) Mfg Co Inc
CUTLASS—Benjamin Div
Cutler Electrical Products Inc 5524 Haverford Ave Philadelphia Pa
Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis
Cutler Industries Inc—see Cutler Light Mfg Co
Cutler Light Mfg Co 2026 N 22 St Phila 21 Pa
Cutler Sign Advertising Co—see Cutler Light Mfg Co
CYBERMOTIVE—Daimlerco
CYCLE-CHECK—Genco Electric Co
CYCLO-CORE—New England Carbide Tool Co Inc
Cyclo-Freez Corp 6318 Cambridge Minneapolis 16 Minn
CYCLO-MASTER—Precision Products & Controls Inc
CYCLO-MONITOR—Precision Products & Controls Inc
CYCLO-TWIST—New England Carbide Tool Co Inc
CYCLOHM—Howard Industries Inc
CYCLONE—Chisholm-Moore Hoist Div Columbus McKinnon Corp
CYCLONE—Scranton Storage Battery Corp
CYLENT—Brook Motor Corp
CYLINDRICELL—United Lighting & Ceiling Co

D

DFI—Designers for Industry Inc
D-FROST-O-MATIC—Paragon Electric Co Inc
D M D—Diamond Expansion Bolt Co Inc
DHS—Distribution & High Line Specialties Co
DL—Derrick Light & Equipment Co
DMR—Miller Co
DPR Inc—see Hardman (H V) Co Inc
D & R Ltd—see Vaco Inc
DTX—Diamond Wire & Cable Co
Da-N-ITE—Premax Products Div
DUF—Diamond Wire & Cable Co
Dage Div Thompson Ramo Wooldridge Inc 455 Sheridan Ave Michigan City Ind
Dage Electronics—see Dage Div Thompson Ramo Wooldridge Inc
Dage Television Div—see Dage Div Thompson Ramo Wooldridge Inc
DAGLAS—Phelps Dodge Copper Products Corp
DAISY—American Pulley Co
Dake Corp 724 Robbins Rd Grand Haven Mich
Dake Engine Co—see Dake Corp
Daimore Corp—see Altee Corp
Daimotrol Co 1375 Clay St Santa Clara Calif
Daimotrol Co 534 Laurel St San Carlos Calif
Dalton Electric Heating Co 11 Goodhue St Salem Mass
DAMCO—Murray (D A) Co Inc
DAMP-COAT—Wilbur & Williams Co
Damp-Chaser Inc 1404 Spartanburg Hwy Hendersonville NC
Dana Fan & Blower Corp 2644 Colerain Ave Cincinnati 14 Ohio
Dante Electric Mfg Co Bantam Conn
DARAY—Lightolier Inc
DART—Arro Expansion Bolt Co
DART DRILL—Arro Expansion Bolt Co
DATA CABLE—Times Wire & Cable Div
DATA MATRIX—Dialight Corp
DATA STRIP—Dialight Corp
DATALITE—Dialight Corp
Davenport Mfg Co—see Davenport Mfg Div
Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill
DAVEY—Vibroscope Co
Davids Gloves Inc 21 W Pleasant St Springfield Ohio
Davidson Fan Co 213 California St Newton 58 Mass
Davis (Dean W) Co—see Dormeyer Industries
Davis Electric Co 28 Parker St Wallingford Conn
Davis Emergency Equipment Co Inc 45 Halleck St Newark 4 NJ
Davis Mfg Co Inc 5100 S McLean Blvd Wichita Kan
Day-Brite Lighting Inc 6260 N Broadway St Louis 15 Mo
Day-Ray Products Inc 1133 Mission St South Pasadena Calif
DAYANITE—Price Bros Inc
DAYLUME—Day-Brite Lighting Inc
DAYSTAR—Lighting Products Inc
Daystrom Inc Weston Instruments Div 614 Frelinghuysen Ave Newark 12 NJ
DAYTEX—Day-Brite Lighting Inc
Dayton Electric Mfg Co 5959 W Howard St Chicago 48 Ill
Day-on Engineering Laboratory—see Delco Products Div
Dayton Industrial Products Co Melrose Park Ill
Dayton Precision Mfg Co 213 N Becket St Dayton 3 Ohio
Dayton Pump & Mfg Co—Taitco Div Tait Mfg Co
Dayton Safety Ladder Co 2337 Gilbert Ave Cincinnati 6 Ohio
DAZIC—Winterburn Mfg Co
Dazor Mfg Corp 4481-99 Duncan Ave St Louis 10 Mo
DAZY—Arro Expansion Bolt Co
DE-FROST-IT—Paragon Electric Co Inc
DE-ION—Westinghouse Electric Corp
DE-LUXE—Premax Products Div Chisholm-Ryder Co Inc
DEAN—Solar Light Mfg Co
DeBothezat Fans Div AMETEK Inc East Moline Ill
DECATHLON—Litecraft Mfg Corp
DECOLITE—Holophane Co Inc
DECOR-A-LITE—Miller Co
DECROLUX—Diffusa-Lite Co
DEFENSE LIGHT—Electric Cord Co
DEFENSITE—Wilbur & Williams Co Inc
DeJure-Amsco Corp Electronics Div 4501 Northern Blvd Long Island City 1 NY
DEKORON—Republic Steel Corp
Delco Products Div General Motors Corp 329 E 1st St Dayton 1 Ohio
DELIGHTS—Special Products Co
DELTA—L & P Lighting
Delta Chemical Works Inc 23 W 60 St New York 23 NY
DELTA-LINE—Delta-Star Electric Div
Delta Metal Products Co 476 Flushing Ave Brooklyn 5 NY
Delta-Star Electric Co—see Delta-Star Electric Div
Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill
Delta-Star Electric Div H K Porter Co Inc 1777 Industrial Way Belmont Calif
Delta Switchboard Co 605 W Fremont St (P O Box 1995) Stockton Calif
DELTABESTON—General Electric Co
DELUXE SECRETARIAL—Linemaster Switch Corp
DEMCO—Dayton Electric Mfg Co
DEMKOTE—Dayton Electric Mfg Co
DENEL—Electric Cord Co
Denison (R B) Mfg Co 386 Broadway Bedford Ohio
DENSHEATH—Anaconda Wire & Cable Co
DENSITROL—Precision Thermometer & Instrument Co
DENTROL—Anaconda Wire & Cable Co
DEPEND-A-TROL—Acro Switch Div
Dependable-Electric Mfg Co Inc 537 Johnson Ave Brooklyn 37 NY
DERBY—Day-Brite Lighting Inc
DERNGOOD—Snyder (M L) & Son Inc
Derrick Light Inc P O Box 9335 Houston Texas
Derrick Light & Equipment Co—see Derrick Light Inc
DESIGNER GROUP—Curtis Lighting Div
DESIGNER LIGHT—Stieber Div
Designers for Industry Inc 4241 Fulton Pkwy Cleveland 9 Ohio
DESOUTTER—Newage Industries Inc
DESPARD—Pass & Seymour Inc
Despatch Oven Co 619 S E 8th St Minneapolis 14 Minn
DETECT-A-FIRE—Fenwal Inc
DETECT-A-FLO—Fenwal Inc
DETECT-A-FAZE—Glo-Lite Instrument Co
DETECT-LITE—Eagle Electric Mfg Co Inc
DETERMORN—Ohmite Mfg Co
Detroit Controls Div—see American-Standard Controls Div
Detroit Electric Furnace Div Kuhlman Electric Co
11400 State Fair Ave Detroit Mich
Detroit Hoist & Machine Co 8292 Morrow St Detroit 11 Mich
Detroit Industrial Products Co—see Gardner Products Co
Detroit Lubricator Co—see American-Standard Controls Div
Detroit Sheet Metal Co—see Young Bros Co
Detroit Sintered Metal Corp—see Bunting Brass & Bronze Co
DETROITER—Detroit Hoist & Machine Co
DeVibiss Co 300 Phillips Ave Toledo 1 Ohio
DeWalt Div American Machine & Foundry Co—see DeWalt Inc
DeWalt Inc Fountain Ave Lancaster Pa
DeWalt Products Corp—see DeWalt Inc
DEXTRA LITE—Swivelier Co
Di-Acro Corp 427 Eighth Ave Lake City Minn
DI-CLAD—Continental-Diamond Fibre
DI-EL-ITE—Railroad Accessories Corp
DI-EN-KEY—Diamond Expansion Bolt Co Inc
DI-FORGE—Diamond Expansion Bolt Co Inc
DI-STAMPT—Diamond Expansion Bolt Co Inc
DIACATOR—General Electric Co
DIAPFILE—Co-operative Utilities Co Inc
DIAL-A-BEND—Pines Engineering Co Inc
DIAL-A-FLO—General Control Co
DIAL-IN—Auth Electric Co Inc
DIAL SAW—Erwood Inc
DIALATROL—Lightguard Electronic Mfg Co Inc
DIALCHECK—Allen Electric and Equipment Co
DIALCLOK—Sangamo Electric Co
DIALCO—Diallight Corp
Diallight Corp 60 Stewart Ave Brooklyn 37 NY
DI-LITE—Halo Lighting Products Inc
DIAMALL-LOY—Diamond Tool and Horseshoe Co
DIAMANTE—Diamond Tool and Horseshoe Co Inc
DIAMOND—Cannon Electric Co
DIAMOND—Eagle Electric Mfg Co Inc
Diamond Calk Horseshoe Co—see Diamond Tool and Horseshoe Co
DIAMOND-D—Co-operative Utilities Co Inc
Diamond Expansion Bolt Co Inc 500 North Ave Garwood NJ
DIAMOND F—Federal Lighting Corp
DIAMOND-H—Hart Mfg Co
Diamond Power Specialty Corp P O Box 415 Lancaster Ohio
DIAMOND SEAL—Snyder (M L) & Son Inc

Diamond Tool and Horseshoe Co 4702 Grand Ave
Duluth 7 Minn
Diamond Wire & Cable Co 445 Park Ave Sycamore
Ill
DIAN-IN—Auth Electric Co Inc
DIATON—Allen Electric and Equipment Co
Dice (J W) Co Englewood NJ
Dicke Tool Co 1201 Warren Ave Downers Grove Ill
Dickey-Grabler Co 10302 Madison Ave Cleveland 2
Ohio
Diebold Inc Canton 2 Ohio
Diehl Mfg Co 1187 Finnerde Ave Somerville NJ
DIELUX—Prescolite Mfg Corp
Dietz (Henry G) Co Inc 12-16 Astoria Blvd Long
Island City 2 NY
Diffusa-Lite Co 1 Forrest St Conshohocken Pa
DIFFUSO—Appleton Electric Co
DIGIMOTOR—Lexus Inc
DIGITRONIC—Weltronix Co
DIL—Derrick Light Inc
DILECTO—Continental-Diamond Fibre
Dillin (Frank W) Corp 315 W Adams Blvd Los
Angeles 7 Calif
DIM-A-LITE—Minneapolis-Honeywell Regulator Co
DINABRAKE—Standard Electric Div
Dings Brakes Inc 4740 W Electric Ave Milwaukee
46 Wis
DIPLOMAT—Anthony Lighting Corp
DIP-PAK—Fidelity Chemical Products Corp
DIRECT-A-CALL—Simpson Mfg Co Inc
DIRECTO—Peteco Inc
DIRECTOLITE—Line Material Industries
DIRECTOR—Industrial Lamp Corp
DIRECTROL—Automatic Control Co
DIRECTRON—Sanford Miller Co Inc
DISCOHM—Ward Leonard Electric Co
DISINFECTAIRE—Art Metal Lighting Div
DISKONECT—Appleton Electric Co
DISPLAYOLITE—Luby-Philite Corp
Distribution & High Line Specialties Co 2100 Del
Norte St Louis 17 Mo
DITCH MIDGET—Mercury Hydraulics
DITCH WITCH—Charles Machine Works Inc
DIVCO—Division Lead Co
DIVIDOHM—Ohmite Mfg Co
Division Lead Co 7742 W 61st Place Summit Ill
Electric Controller Inc Post Office Box 5844 Birming-
ham 9 Ala
Dixie Electrical Mfg Co P O Box 6298-Tarrant Branch
Birmingham 7 Ala
Dixie Radiant Glassheat Co—see Dixie Radiant Elec-
tric Heat Corp
DIXIE RAY—Dixie Raydiant Electric Heat Corp
Dixie Raydiant Electric Heat Corp 66 Eleventh St
NE Atlanta 9 Ga
Djeco Div Djordjevic Engineering Co 1933 N Damen
Ave Chicago 47 Ill
D'LUX LINE—White-Rodgers Co
DO-ALL—Cable Electric Tool Corp
DO-ALL—Wodack Electric Tool Corp
Dockson Corp 3839 Wabash Ave Detroit 8 Mich
Doeclam Corp—see Minneapolis-Honeywell Co Boston
Div
Doico Mfg Co 2350 Curry St Long Beach 5 Calif
Dolph (John C) Co—Monmouth Junction NJ
DOME ALZAK—Guth (Edwin F) Co
DOMELITE—Mirroflexor Co Inc
DOMEX—Lightolier Inc
DOMINION Electric Corp 150 Elm St Mansfield Ohio
Dongan Electric Mfg Co 2987-3001 Franklin St De-
troit 7 Mich
DONUT—Associated Research Inc
DONWOOD—Sierra Electric Corp
Doors & Operators Inc—see Quincy Mfg Co
Dormeyer Industries 3418 Milwaukee Ave Chicago
41 Ill
Dorsey (John E) Co 570 E First St Boston 27
Mass
DOS-LUG—Dossert Mfg Corp
DOSLOY—Dossert Mfg Corp
Dossert Mfg Corp 249-255 Huron St Brooklyn 22
NY
DOSSON—Dossert Mfg Corp
DOSTEX—Dossert Mfg Corp
DOSULON—Dossert Mfg Corp
DOUBLE-DIAMOND—H-B Instruments Co
DOUBLE ENGINEERED—Metalcrafts Inc
DOUBLE-KOOL—Hastings Air Conditioning Co Inc
DOUBLENCLOSED—U S Electrical Motors Inc
DOUBLEX—Johns-Manville
Dow Corning Corp Midland Mich
DOWNLITE—Rambusch Decorating Co
Doyle (J E) Co 1220 W 6th St Cleveland 13 Ohio
Doyle Electric Dryer—see Doyle (J E) Co
Doyle Vacuum Cleaner Co 234 Stevens St S W Grand
Rapids Mich
DRACO—Versen (Kurt) Co
Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill
DRAMALITE—Century Lighting Inc
DREADNAUGHT—Metalcraft Products Co Inc
DREAMALTER—Electro-Solid Controls Inc
Dreier Brothers Inc 7301 Woodlawn Ave Chicago 19
Ill
DREXEL—Keystone Electric Mfg Co
DRI-CELL—Celihet Inc
DRI-FILM—General Electric Co
DRI-LOK—Jefferson Electric Co
DRI QUIK—Dry Climate Lamp Corp
DRI-STIK—Chicago Decal Co
DRI-TRAN—Land-Air Inc
DRILFAST—U S Expansion Bolt Co
DRILL-HAMMER—Rawplug Co Inc
DRILSET—U S Expansion Bolt Co
DRITHERM—North American Electric Lamp Co
Drive-Pins Inc—see Ammo Products
DRIVE POINT—Hubbard & Co
Driver (Wilbur B) Co 1875 McCarter Highway New-
ark 4 NJ
DRUM KING—American Pulley Co

Dry Climate Lamp Corp Greenburg Ind
Dry-EX—Acme Industries Inc
DRYGALV—American Solder & Flux Co
DRYMASTER—Drymatic Co
Drymatic Co 715 N Fayette St (P O Box 591)
Alexandria Va
DRYVIN—Star Expansion
DU-OP—General Control Co
DUA-LITE—Curtis Lighting Div
DUAFUEL—Nordberg Mfg Co
DUAL ARC—Electric Arc Inc
DUAL-BEAM—Cable Electric Products Inc
DUAL-FIN—Electrovector Inc
DUAL GRIP—Weaver (J A) Co
DUAL-HEAT—Jensen Inc
Dual-Lite Co Inc Newtown Conn
DUAL MITE—Thermal Engineering & Design Co
DUALBRITE—Walker Brothers
DUALCOTE—Walker Brothers
DUALENS—Garcy Lighting Div Garden City Plating &
Mfg Co
DUALTRONIC—Goldak Co Inc
DUB-L-PLUG—Superior Electric Co
DuBois Electric Storage Battery Co 500 W DuBois
Ave DuBois Pa
DUCK-VAR—Electro-Technical Products Div
DUCT-FREE—Broan Mfg Co Inc
DUCT-WRAP—Zipper tubing Co
DUCTAPE—Arno Adhesive Tapes Inc
DUCTATHERM—Merco Corp
Duff-Norton Co P O Box 1719 Charlotte NC
Duke Corp St Charles Ill
Dumore Co 1300 17th St Racine Wis
DUMPER—Allied Mfg & Sales Co
DUMPER-VAN—Vanguard Mfg Co
Duncan Electric Mfg Co Lafayette Ind
DUNCO—Struthers-Dunn Inc
Dunton (M W) Co 350 Kinsley Ave Providence RI
DUO-DRILL—Cummins Portable Tool Div
DUO-JOBMASTER—Ramset Fastening System
DUOCARB—Driver (Wilbur B) Co
DUOCONE—Lightolier Inc
DUOLET—Millerbernd Mfg Co
DUOTROL—Automatic Control Co
DUPLEX—Nektar District Telegraph Co
DUPLEX-A-LITE—Miller Co
DURA CRIMP—Anderson Electric Corp
Dura Electric Lamp Co Inc 62 E Bigelow St Newark
14 NJ
DURA-FAN—General Blower Co
DURA GRIP—Anderson Electric Corp
DURA LUG—Anderson Electric Corp
DURA-TAP—Anderson Electric Corp
DURA-TEMP—General Blower Co
DURA-TRAN—Mid-States Welder Mfg Co
DURA WELD—Anderson Electric Corp
DURABAKE—S & C Electric Co
DURABLE—Seager Standard Carbon Co
DURAC—H-B Instrument Co
DURACLAD—Electric Machinery Mfg Co
DURACODE—Anaconda Wire & Cable Co
DURALEAD—Tevco Insulated Wire
DURALEER—Duray Fluorescent Mfg Co
DURALINE—Anaconda Wire & Cable Co
Durallite Lanterns Inc 163 Long Beach Rd Island
Park NY
DURALOX—Anaconda Wire & Cable Co
DURALYTIC—Safe-T-Mike Corp
DURAMATIC—Dura Electric Lamp Co Inc
Durant Mfg Co 1900 N Buffon St Milwaukee 1
Wis
DURASEATH—Anaconda Wire & Cable Co
DURATACH—Wheeler Reflector Co
DURATRAK—General Radio Co
Duray Fluorescent Mfg Co 3318 W Montrose Ave
Chicago 18 Ill
DUREX—Duro-Test Corp
DUREX—Wheeler Reflector Co
DURIUM—Burndy Corp
DURO-BITE—Duro Fittings Co
Duro Fittings Co 2210 S Davie Ave Los Angeles 22
Calif
DURO-FLEX—Duro-Test Corp
DURO-HUB—Duro Fittings Co
DURO-LET—Duro Fittings Co
Duro Metal Products Co Kildare & Schubert Sts
Chicago Ill
Duro-Test Corp 2321 Hudson Blvd North Bergen NJ
DUROCO—Scranton Storage Battery Corp
Durolet Mfg Co—see Red Seal Electric Co
DUROTHERM—Hexacon Electric Co
DUSTFOE—Mine Safety Appliances Co
DUSTITE—Adam (Frank) Electric Co
DUTCH BOY—National Lead Co
DUTCH BRAND—Johns-Manville
DUTRAX—Anaconda Wire & Cable Co
DUTYMASTER—Master Electric Div Reliance Electric
& Engineering Co
DUWEL—Electro Engineering Products Co Inc
DUZ-ALL—Siebring Mfg Co
Dwyer (F W) Mfg Co Woodland at Greenwood (PO
Box 373) Michigan City Ind
DYCAP—National Electro Dynamics Corp
DYNODRILL—Milwaukee Electric Tool Corp
DYN-AUT-RONIC—Gisholt Machine Co
DYNA-LIGHT—Peteco Inc
DYNA-TORQ—Dynamic Div
DYNACEL—Willard Sales
DYNACHROME—Whitney Blake Co
DYNACLAD—Exide Industrial Marketing Div
DYNALITE—Compco Corp
Dynamic Div Eaton Mfg Co 3122 14th Ave Ken-
sha Wis
DYNAMIC BETA—Hickok Electrical Instrument Co
DYNAPOWER—Carol Cable Co
DYNAPRENE—Whitney Blake Co
DYNARAY—Electro Powerpacs Inc
DYNASEAL—Whitney Blake Co
Dynaseal Lighting Corp—see Electro Powerpacs Inc

DYNASPEDE—Dynamatic Div
DYNATROL—Electric Tachometer Corp
DYNATROL—Automation Products Inc
DYNETRIC—Westinghouse Electric Corp
DYNUGRAPH—Annis (R B) Co
DYNOSAC—Kaiser Aluminum & Chemical Sales Inc

E

E-LITE—Guth (Edwin F) Co
EC&M—Square D Co Electric Controller & Mfg Div
EDCO—Eynon-Dakin Co
E J S Lighting Corp 321 E Pico Blvd Los Angeles
21 Calif
E'LITE—Drake Mfg Co
E-Lite Co Inc 111 W 22 St New York 11 NY
EMC—Howard Industries Inc
ERP—Wallace & Tiernan Inc
ESCO—Electronic Specialty Co
ETC Inc 990 E 67 St Cleveland 3 Ohio
ETP—Electrical Tubular Products Inc
EZ—Henderson Electric Co
E-Z—Penn-Union Electric Corp
E-Z CODE—Westline E-Z-Code Div
E-Z CUTTER—Collins Machinery Corp
EZ SERVICER—Wiley (R & W) Inc
E-Z STRIPPER—Ideal Industries Inc
E-Z TALK—Simpson (Mark) Mfg Co Inc
EAGALINE—Eagle Electric Mfg Co Inc
EAGALOK—Eagle Electric Mfg Co Inc
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South
Long Island City 1 NY
Eagle Mfg Co 3508 Avalon Blvd Los Angeles 11
Calif
Eagle-Picher Co American Building Cincinnati 1
Ohio
Eagle Plastics Co—see Eagle Electric Mfg Co Inc
Earl (H W) & Co 6225 S W 8th St Miami 44 Fla
Earl Electric Mfg Corp 35-20 Borden Ave Long
Island City NY
Early (Edward E) Co 1129 5th St N W Canton 3
Ohio
Earthworm Boring Machine Inc 1415 14th St (P O
Box 1100) Santa Monica Calif
Easco Products Inc P O Box 587 Ypsilanti Mich
EASTERN—Circle F Mfg Co
Eastern Insulated Wire Corp Trenton 4 NJ
Eastern Specialty Co 3617 N 8th St Phila 40 Pa
Eastern Tube & Tool Co Inc—see Etico Wire & Cable
Corp
EASTEX—Circle F Mfg Co
Easy-Heat Inc 209 E Michigan St New Carlisle Ind
EASY-MOUNT—General Electric Co Major Appliance
Div
EASY TACH—Quadrangle Mfg Co
EASY WIRE—Gem Electric Mfg Co Inc
Edco Mfg Co 265 N Hamilton Rd Columbus 13
Ohio
Ebert Electronics Corp 212-26 Jamaica Ave Queens
Village 28 LI NY
ECLIPSE—Frick Co
ECO—Economy Fuse Div
ECOA—Equipment Corp of America
ECON—Economy Fuse Div
ECON-O-MIZER—Acme Industries Inc
ECONALFLOOD—Appleton Electric Co
ECONO-STAKE—Duro Fittings Co
ECONO-WATT—Redmond Co Inc
ECONO-WISE—Project Fixture Mfg Corp
ECONICOM—Simpson (Mark) Mfg Co Inc
ECONOFONE—Simpson (Mark) Mfg Co Inc
ECONOLINE—Duro Fittings Co
ECONOLITE—Dockson Corp
Economaster Sales Inc P O Box 1136 Nashville 3
Tenn
ECONOMY—Arex Co
ECONOMY—Coates Electric Mfg Co
ECONOMY—Keystone Electric Mfg Co
Economy Engineering Co 4511 West Lake St Chicago
24 Ill
Economy Fuse Div Federal Pacific Electric Co 2070
Maple St Des Plaines Ill
Economy Fuse & Mfg Co—see Economy Fuse Div
EDCO—Eynon-Dakin Co
Edco International Corp 20722 W Seven Mile Road
Detroit 19 Mich
EDDYMAG—Square D Co Electric Controller & Mfg
Div
Ederer Engineering Co 2943 1st Ave S Seattle 4
Wash
EDGE-GLO—Curtis Lighting Div
EDGEHOM—Ward Leonard Electric Co
Edi Products Inc—see Spier Electronics Inc
Edison Heabute Div—see McGraw-Edison Co Albion
Div
Edison (Thomas A) Industries McGraw-Edison Co
Storage Battery Div West Orange NJ
EDISON TROPIC-AIRE—McGraw-Edison Co Albion
Div
EDUCATOR—Lighting Products Inc
Edwards Co Inc Norwalk Conn
EECO—Marvin Electric Mfg Co
EFCOR—Electrical Fittings Corp
EFCORLET—Electrical Fittings Corp
Efficiency Electric & Mfg Co Park Ave Ext P O Box
30 East Palestine Ohio
EFFICO—Hirschman-Pohle Co Inc
Eisenstat (David)—see Metalcrafts Inc
Eisler Engineering Co Inc 750 S 13 St Newark 3
NJ
EITHEREND—Anderson (Albert & J M) Mfg Co

EKTACOM—Fisher Berkeley Corp
Elastic Stop Nut Corp of America Elizabeth Div 1027
Newark Ave Elizabeth NJ
ELBENDEKS—Henderson Electric Co
ELBOLIFT—AUTOMATIC Div of Yale & Towne Mfg Co
Eldon Industries Inc—see Ungar Electric Tools
ELECTROL-FEED—Delta-Star Electric Div
ELECTRO-0-LINE—Minneapolis-Honeywell Regulator Co
Industrial Div
ELECTRO-0-PULSE—Minneapolis-Honeywell Regulator
Co Industrial Div
ELECTRO-0-VANE—Minneapolis-Honeywell Regulator Co
Industrial Div
ELECTRO-0-VOLT—Minneapolis-Honeywell Regulator Co
Electra Insulation Corp 33-30 57th St Woodside 77
NY
Electra Mfg Co Industrial Park Middletown NY
Electra Mfg Co 4051 Broadway Kansas City Mo
Electra Motors Inc 1110 N Lemon St Anaheim
Calif
Electran Mfg Co 1901 Clybourn Ave Chicago 14 Ill
Electrend Products Corp State & Water Sts (Box
110) St Joseph Mich
ELECTRESTEEM—Electric Steam Radiator Corp
ELECTRI-CENTER—I-T-E Circuit Breaker Co Bulldog
Electric Products Div
Electri-Cord Mfg Co Inc 2554-2568 E 18 St
Brooklyn 35 NY
Electri-Flex Co Roselle Ill
Electric Arc Inc 152 Jelliff Ave Newark 8 NJ
Electric Boat Co—see Electro Dynamic Div General
Dynamics Corp
Electric Controller & Mfg Co—see Square D Co Electric
Controller & Mfg Div
Electric Cord Co 432 Plane St Newark 2 NJ
Electric Cords & Supply Corp 413 E 3rd St Los
Angeles 13 Calif
Electric Deodorizer Corp—see Edo International Corp
Electric Distribution Products Co—see Cutler-Hammer
Inc
ELECTRIC DOORMAN—Electric Power Door Co Inc
ELECTRIC FLOWER—Aerolux Light Corp
Electric Heating Products Inc—see Everwarm Inc
Electric Hose & Rubber Co 12th & Dure Sts Wil-
mington Del
Electric Hotpack Co Inc—see Hotpack Corp
Electric House Number Co 8670 W Washington Blvd
Culver City Calif
Electric Indicator Co Inc Camp Ave Springdale
Conn
Electric Jobbers Suppliers Corp—see EJS Lighting
Corp
Electric Lighting Sales Inc P O Box 1907 Stockton
Calif
ELECTRIC-LUMINUS—Luminous Ceilings Inc
Electric Machinery Mfg Co 800 Central Ave Minne-
apolis 13 Minn
Electric Materials Co Box 390 North East Pa
Electric Motor Corp—see Howard Industries Inc
Electric Motors & Specialties Inc King & Hamsher
Sts Garrett Ind
Electric Number Co—see Electric House Number Co
Electric Power Door Co Inc 2127 E Lake St Minne-
apolis 7 Minn
Electric Products Co 1725 Clarkstone Rd Cleveland
12 Ohio
Electric Radiant Heat Inc 1517 Wells St Ft Wayne
Ind
Electric Railway Equipment Co—see Elreco Corp
Electric Railway Improvement Co—see Erico Products
Inc
Electric Re-Light Co Uniman Pl at S Goodman
Rochester 20 NY
Electric Regulator Corp Norwalk Conn
Electric Service Co—see Delta-Star Electric Div H K
Porter Co Inc
Electric Service Systems Inc 5555 Highway 5 West
Minneapolis 24 Minn
Electric Soldering Iron Co Inc West Elm St Deep
River Conn
Electric Specialty Co—see Electronic Specialty Co
Electric Steam Radiator Corp 1 Electric Ave Paris
Ky
Electric Switch Corp 2320 S Tibbs Ave (P O Box
41037) Indianapolis 41 Ind
Electric Tachometer Corp 68th & Upland Sts Phila
42 Pa
Electric Tube Products—see Electrical Tubular Prod-
ucts Inc
Electrical Engineers Equipment Co 25th Ave & Division
St Melrose Park Ill
Electrical Facilities Inc—see Knopp Inc
Electrical Fittings Corp 123 Smith St East Farming-
dale NY
Electrical Mfg Co 425 Lake Ave Racine Wis
Electrical Windings Inc 2015 N Kolmar Ave Chicago
39 Ill
ELECTRICAL PRICE BOOK—Biddle Trade Publishing Co
Electrical Service Co—see Esco Mfg Co
ELECTRICAL TRADE BOOK—Trade Service Publica-
tions Inc
Electrical Tubular Products Inc 74-16 Grand Ave
Maspeth NY
ELECTRICITY'S SAFETY VALVE—Bussmann Mfg Div
ELECTRICORD—Pacific Electric Cord Co
ELECTRICTUBE—Mark (Clayton) & Co
ELECTRDUCT—Ideas Inc
ELECTRIK—Minneapolis-Honeywell Regulator Co In-
dustrial Div
ELECTRO—Dunton (M W) Co
ELECTRO-CAM—Warner Electric Brake & Clutch Co
Electro Compound Co 4145 W 150 St (P O Box
8604) Cleveland 35 Ohio
ELECTRO-COOLER—Allis-Chalmers Mfg Co
Electro Devices Inc 4648 Easton Ave St Louis 13
Mo
Electro Devices Inc 75 Adams St Newton Mass

Electro Dynamic Div General Dynamics Corp 163
Ave A Bayonne NJ
Electro Dynamics Corp—see National Electro Dynamics
Corp
Electro Engineering Products Co Inc 609 W Lake St
Chicago 6 Ill
Electro Engineering Works 401 Preda St San
Leandro Calif
Electro-Graphic Graver Co P O Box 265 Toledo 1
Ohio
ELECTRO-FLO—Hays Mfg Co
ELECTRO-LARM—Electro Devices Inc
Electro Lift Inc 204 Sargeant Ave Clifton NJ
Electro Lighting Corp 1536 S Paulina St Chicago 8
Ill
ELECTRO-LITE—Solar Sonic Devices Inc
Electro Luminaire Corp—see Electro Lighting Corp
ELECTRO MAT—Interstate Rubber Products Corp
Electro Mechanical Devices Co—see Nankervis (Geo L)
Co
Electro-Mechanical Instrument Co 8th & Chestnut Sts
Perkasie Pa
Electro-Mechano Co 241 E Erie St (EM) Milwa-
ukee 2 Wis
ELECTRO-PANE—Electro Devices Inc
Electro Powerpacs Inc 5 Hadley St Cambridge 40
Mass
ELECTRO-PROBE—Erwood Inc
Electro-Products Mfg Co—see Electro-Ray Mfg Co
Electro-Ray Mfg Co 8310 N Highway 99 Vancom-
ver Wash
Electro Silv-A-King Corp—see Electro Lighting Corp
Electro-Snap Switch & Mfg Co—see Controls Co of
America Control Switch Div
Electro-Solid Controls Inc 8001 Bloomington Free-
way Minneapolis 20 Minn
Electro Switch Corp King Ave Weymouth 88 Mass
Electro-Technical Products Div Sun Chemical Corp
113 E Centre St Nutley 10 NJ
ELECTRO-WIND—Allen Cooler & Ventilator Inc
ELECTROFLUID—Link-Belt Co
ELECTROLETS—Killark Electric Mfg Co
ELECTROLINE—Superior Switchboard & Devices Div
Electroline Mfg Co 2622 E 51st St Cleveland 4
Ohio
Electromaid Corp—see Can Arm Corp
ELECTROMATIC—National Time & Signal Corp
ELECTROMATIC—Siebring Mfg Co
ELECTROMITE—Hays Mfg Co
Electromode Div Commercial Controls Corp P O Box
1052 Rochester 3 NY
ELECTRONIC BUTLER—Simpson (Mark) Mfg Co Inc
Electronic Center—see Dalmotron Co
Electronic Control Corp 15341 Dale Detroit 23 Mich
ELECTRONIC-DIRECTOR—Simpson (Mark) Mfg Co Inc
Electronic Measurements Co Inc Lewis St & Maple
Ave Eatontown NJ
Electronic Specialty Co 5121 San Fernando Rd Los
Angeles 39 Calif
ELECTRONIC WITCH—Fisher Research Laboratory Inc
Electronics Corp of America One Memorial Dr Cam-
bridge Mass
ELECTRONIK—Minneapolis-Honeywell Regulator Co
Industrial Div
ELECTROPULT—Westinghouse Electric Corp
Electrosnap Corp—see Controls Co of America Control
Switch Div
ELECTROSTART—Lake Shore Electric Corp
ELECTROSTRIP—I-T-E Circuit Breaker Co Bulldog
Electric Products Div
Electrovector Inc 475 Flushing Ave Brooklyn 5 New
York
Electrovert Inc 240 Madison Ave New York 16 NY
ELECTROWELD—Electric Arc Inc
ELECTROWELD—Universal Welder Corp
ELECTRUNITE—Republic Steel Corp
ELEGANCE—White-Rodgers Co
ELEMEX—Line Material Industries
ELFCO—Everglow Lighting Fixture Co Inc
Elgin National Watch Co Electronics Div 2435 N
Naomi St Burbank Calif
ELIED—Farrelloy Co
ELINCO—Electric Indicator Co Inc
ELIPSO—Apleton Electric Co
ELIPTICONE—Art Metal Lighting Div
ELIPTISQUARE—Art Metal Lighting Div
ELIPTOR—Revere Electric Mfg Co
Elite Glass Co Inc—see E-Lite Co Inc
Elite Import Co—see E-Lite Co Inc
Eliza Metal Products Co Box 408 Bridgeville Pa
ELJAY—Segli (L J) Co
ELKALDY—Mallory (P R) & Co Inc
ELKONITE—Mallory (P R) & Co Inc
ELKONIUM—Mallory (P R) & Co Inc
Ellanor Chemical Co—see London Chemical Co Inc
ELLARM—Ellenco Inc
ELLBELL—Ellenco Inc
Ellenco Inc 3322 M St N W Washington 7 DC
Elliott Co Jeannette Pa
Elliott Electric Mfg Corp 50-30 98th St Corona 68
NY
Elliott Electric Products Co—see Elliott Electric Mfg
Corp
ELLIPTI-FLOOD—Electro Lighting Corp
ELLITE—Ellenco Inc
Ellman Co—see Ellenco Inc
Ellmann Engineering Co—see Ellenco Inc
ELPAR—Ellwell-Parker Electric Co
ELRAD—Westchester Brickette Products Co Inc
Elreco Corp 2000 Central Ave Cincinnati 14 Ohio
ELTAP—Burdny Corp
Ellwell-Parker Electric Co 4319 St Clair Ave Clevel-
and 3 Ohio
Emarco Corp 1950 Neva Drive Dayton 14 Ohio
EMCO—Earl Electric Mfg Corp
EMCO—Ender-Monarch Corp
EMD-COM—Wing (L J) Mfg Co
Emeralite Inc—see General Lighting Co
EMERG-A-LITE—Gould-National Batteries Inc

EMERG-U-MATIC—Dixie Controller Inc
Emerson Apparatus Co 171 Tremont St Melrose
Mass
Emerson Electric Mfg Co 8100 Florissant Ave St
Louis 36 Mo
Emerson-Imperial Lighting Co Loyalhanna Park La-
trobe Pa
Emerson Plastics Corp 1383 Seabury Ave Bronx 61
NY
Emerson-Pryne Co Towne Ave at Monterey (P O Box
698) Pomona Calif
Emerson-Rittenhouse Co Inc 68 East St Honeoye
Falls NY
EMICO—Electro-Mechanical Instrument Co
EMPIRE—Cam-Lok Div Empire Products Inc
EMPIRE—Diamond Expansion Bolt Co Inc
EMPIRE—Modern Light Co Inc
Empire Corp 1566 S 83rd St Milwaukee 14 Wis
Empire Metal Box Co Inc 68 Meserole St Brooklyn 6
NY
Empire Products Inc—Cam-Lok Div Empire Products
Inc
Empire Switchboard Co Inc 810 Fourth Ave Brook-
lyn 32 NY
Enameited Metals Co—see Pittsburgh Standard Con-
duit Co
ENAMELITE—Republic Steel Corp
ENAMELKOTE—Mark (Clayton) & Co
ENCLOSURES UNLIMITED—Burns (James F) Co
Ender-Monarch Corp 141 Lanza Ave Garfield NJ
ENDON—Pollack Luminescence Corp
ENDON—Votarc Tubes Inc
ENDOVOL—Revere Electric Mfg Co
ENDULATOR—Rusgreen Mfg Co
ENDURA—Litecraft Mfg Corp
ENDURITE—Crescent Insulated Wire & Cable Co
ENDURPRENE—General Insulated Wire Works
ENERPAC—Blackhawk Industrial Products Co
Engelhard (Charles) Inc—see Engelhard Industries Inc
Engelhard Industries Inc 113 Astor St Newark 14
NJ
Engelhard Industries Inc Industrial Equipment Div
Instruments & Systems Sec 850 Passaic Ave East
Newark NJ
ENGINATORS—Waukesha Motor Co
ENPO—Piqua Machine & Mfg Co
ENSLEY—Ideas Inc
ENTERITE—General Cable Corp
ENVOY—Keystone Electric Mfg Co
EONITE—Kaiser Aluminum & Chemical Sales Inc
EPCO Electronics Inc 140 Liberty St NY 6 NY
EPI-GLAS—Electro-Technical Products Div
EPOSET—Hardman (H V) Co Inc
EPOXIGLAS—Chance (A B) Co
Epoxyline Corp 1428 N Tyler Ave South El Monte
Calif
Equipment Corp of America 1537 Superior Ave Clevel-
and 14 Ohio
Eraser Co Inc 1068 S Clinton St Syracuse 4 NY
ERECT-A-LIFT—Allied Mfg & Sales Co
ERICKSON—Thomas & Betts Co
Erickson Electrical Equipment Co 4460 N Elston Ave
Chicago 30 Ill
Erickson Power Lift Trucks Inc St Anthony Blvd &
University Ave NE Minneapolis 18 Minn
Erickson Special Equipment Mfg Co—see Erickson
Power Lift Trucks Inc
Erico Products Inc 2070 E 61 Place Cleveland 3
Ohio
Erisco Mfg Co 1660 Hayden Ave Cleveland 12 Ohio
Erie Glass Mfg Co 564 Union Trust Bldg Pittsburgh
19 Pa
Erie Malleable Iron Co Kondu Div—see Kondu Corp
Erie Sales & Mfg Co—see Erie Glass Mfg Co
Erie Tool Works 12th & Liberty Sts Erie Pa
Erwood Inc 1770 Berteau Ave Chicago 13 Ill
ESCO—Electro Switch Corp
Esco Mfg Co P O Box 1039 Greenville Tex
ESCORT—Stevens Appliance Truck Co
ESICO—Electric Soldering Iron Co Inc
ESS—Electric Service Systems Inc
Ess Instrument Company—see Photomation Inc
Essex Wire Corp Wire & Cable Div 2601 S Adams
Marion Ind
ESTRON—Electric Service Systems Inc
ESTANE—Goodrich (B F) Chemical Co
Esterline-Angus Co—see Esterline Angus Instrument Co
Inc
Esterline Angus Instrument Co Inc P O Box 596 In-
dianapolis 6 Ind
Esty Mfg Co 112 S Sangamon St Chicago 7 Ill
Ettraco Mfg Co—see Hindle Transformer Co Inc
ETTCO-FLEX—Etico Wire & Cable Corp
ETTCO-PLASTIC—Etico Wire & Cable Corp
Etico Wire & Cable Corp 75 Onderdonk Ave Brook-
lyn 37 NY
Euclid Electric & Mfg Co 50 Edwards St Madison
Ohio
EUREKA—Morse (Frank W) Co
EVANOHM—Driver (Wilbur B) Co
EVER-LOK—Russell & Stoll Co Inc
EVERADE—Union Carbide Consumer Products Co
Everett (E A) Inc—see Railroad Accessories Corp
Everglow Lighting Fixture Co Inc 332 E Jericho Turn-
pike Huntington Station NY
EVERGREEN—Snyder (M L) & Son Inc
EVERLITE—Curtis Development & Mfg Co
Everwarm Inc 3600 Pleasant Ridge Rd Knoxville
Tenn
Ewald Instruments Box 124P Kent Conn
Excel Electric Service Co Inc 2113 S Western Ave
Chicago 8 Ill
Excel Fuse Co 117 W Erie St Pittsburgh 12 Pa
EXECUTIVE—Linemaster Switch Corp
Executone Inc 47-37 Austell Pl Long Island City
NY
EXEL—Superior Electric Co
EXFLEX—Lewis Engineering Co

Exide Industrial Div—see Exide Industrial Marketing Div
Exide Industrial Marketing Div Electric Storage Battery Co Rising Sun & Adams Ave (P O Box 5723) Philadelphia 20 Pa
Emet Corp 127 Marbledale Rd (P O Box 485) Tuckahoe NY
EXOLIVE—Penetone Co
EXPANDER—Arvo Expansion Bolt Co
EXPLOSI-METER—Mine Safety Appliances Co
EXTRA LIFE—Westinghouse Electric Corp Lamp Div
EXTRAFLEX—Universal Metal Hose Co
EXTRUD-LITE—Magni Flood Inc
EYE COMFORT—Curtis Lighting Div
EYE-EASY—Manning (RA) Co Inc
EYE SAVING—Westinghouse Electric Corp Lamp Div
Eynon-Dakin Co 9125 Telegraph Rd Detroit 39 Mich
EZY-TEAR—Anderson Electric Corp

F

FA—Adam (Frank) Electric Co
F & F—Trent Inc
F & N Metal Products Inc—see Niemi (Frank) Metal Products Inc
F P—Mallory (P R) & Co Inc
FSP—Square D Co
F W D Corp 105 E 12 St Clintonville Wis
Fairbanks Co 393 Lafayette St NY 3 NY
Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill
Fairfield Industries Inc Passaic Ave & Pier Lane Caldwell NJ
FAIRLEADER—Barry (William B) Co
FAIRWAY—Day-Brite Lighting Inc
FALCON—Guth (Edwin F) Co
Falcon Equipment Co 13th St (Box E-255) New Brighton Pa
Falk Corp Box 492 Milwaukee 1 Wis
Faltstrom Co 62 Faltstrom Court Passaic NJ
FAMOUS—Goshen Churn & Ladder Inc
FAN-GLD HEETAIRE—Markel Electric Products Inc
FAN-PAC—DeBothezat Fans Div
FAN-PAC—General Blower Co
FANFARE—Fannon Electronic Industries Inc
Fanner Mfg Co Electrical Products Div Brookside Park Cleveland 9 Ohio
FANNGRIPS—Fanner Mfg Co Electrical Products Div Fannon (John J) Co—see Fannon (John J) Products Co
Fannon (John J) Products Co 3000 E Woodbridge Detroit 7 Mich
FANNSPICES—Fanner Mfg Co Electrical Products Div
Fanon Electric Co Inc—see Fanon Electronic Industries Inc
Fanon Electronic Industries Inc 439 Frelinghuysen Ave Newark NJ
Fanon Electronic Sales Corp—see Fanon Electronic Industries Inc
FANON-PONE—Fannon Electronic Industries Inc
Faraday Inc 2011 W Beecher Rd Adrian Mich
FARADOD—Westinghouse Electric Corp
FARGO—Farrelloy Co
Fargo Mfg Co Inc 845 Main St Poughkeepsie NY
Faries Lamp Div—see AOW Corp
Faries Mfg Corp—see AOW Corp
FARM-O-STAT—Minneapolis-Honeywell Regulator Co
Farmer Electric Co—see Farmer Electric Products Co Inc
Farmer Electric Products Co Inc 2300 Washington St Newton Lower Falls 62 Mass
FARMOTOR—Westinghouse Electric Corp
FARMSTARTER—Westinghouse Electric Corp
Farrelloy Co 1245 N 26th St Phila 21 Pa
FAS-TIN—Farrelloy Co
Fasco Industries Inc Davis & Toppin Sts Rochester 2 NY
Fastform Div—see Heller Roberts Instruments Corp
FASHION—White-Rodgers Co
FASHION PLATE—Bryant Electric Co
Fast (John E) & Co 3580 N Elston Ave Chicago 18 Ill
Fast-Lok Mfg Co Ash St at Bedford Bridgeport 5 Conn
FASTHOLD—Mitchell Rand Mfg Corp
FASTITE—Precision Machine Products
Fastway Fasteners Inc 2157 E 28 St Lorain Ohio
FAULTFINDER—Brundee Co
FAULTMASTER—Hubbard & Co
Faym Products Mfg Co—see A K Electric Corp
FAYM-US—A K Electric Corp
FEATHERLITE—Century Lighting Inc
FEATHERTOUCH—Theiler (H J) Corp
FEATHERWEIGHT—Goldak Co Inc
FEATHERWEIGHT—Wing (L J) Mfg Co
Fedders Corp 58-01 Grand Ave Maspeth NY
Fedders-Quigan Corp—see Fedders Corp
FEDERAL—Dillin (Frank W) Corp
Federal Electric Co Inc—see Federal Sign & Signal Corp
Federal Electric Products Co—see Federal Pacific Electric Co
Federal Enterprises—see Federal Sign & Signal Corp
Federal Lighting Corp 1425 Rockwell Ave Cleveland 14 Ohio
Federal Lighting Div—see Federal Lighting Corp
Federal Machine & Welder Co—see Federal-Warco Div
Federal Pacific Electric Co 50 Paris St Newark 5 NJ
Federal Shock Mount Corp—see Korfund Co
Federal Sign & Signal Corp 13626 S Western Ave Blue Island Ill

Federal Telephone and Radio Co—see ITT Components Div
Federal-Warco Div McKay Machine Co 1745 Overland Ave NE Warren Ohio
Federated Metals Div American Smelting & Refining Co 120 Broadway New York 5 NY
FEED-IN—Square D Co
Feedrail Corp 125 Barclay St New York 7 NY
FEEDUCT—Columbia Metal Products Co
Feiler Engineering & Mfg Co 8026 N Monticello Ave Skokie Ill
FELCO—Forest Electric Co
FEMCO—Fluorescent Equipment & Mfg Co
FEMCO—Fouch Electric Mfg Co Inc
FENCE-RITE—Electric Service Systems Inc
Fenwal Inc Pleasant St Ashland Mass
FERALLOY—Crouse-Hinds Co
FERMONT—International Ferromont Inc
Ferrara Inc—see Webster Electric Co
FERRIMAG—Crucible Steel Co of America
FERRITRACER—Telex/Lumen Inc
FERRUBRON—Carbolinum Wood Preserving Co
Ferry Mfg Co Inc 3116 Spring Garden St Philadelphia 4 Pa
Fiber Conduit Co—see Orangeburg Mfg Co
FIBRALLOY—Genco Electric Co
FIBREMAT—Minnesota Mining & Mfg Co Irvington Div
FIBROID—Johns-Manville
FIBRPLUG—Star Expansion
Fidelity Chemical Products Corp 470 Frelinghuysen Ave Newark 12 NJ
Fidelity Electric Co Inc 332 N Arch St Lancaster Pa
Fidelity Instrument Corp 1000 E Boundary Ave York Pa
FIEFLEX—Insulation Mfrs Corp
FILIP—Phillips Control Co
FILTAIRETTE—General Scientific Equipment Co
FILTER-FLAG—Minneapolis-Honeywell Regulator Co
FILTER-LITE—Minneapolis-Honeywell Regulator Co
FINCOR—Fidelity Instrument Corp
Finland House Lighting—see Litecraft Mfg Corp
FINROD—Tuttle & Kift Inc
Fire Alarm Thermostat Corp 53 W 23 St New York 10 NY
Fire Detective Inc 300 Chancellor Ave Newark 12 NJ
FIRE FUSE—Wind-Way Fan & Ventilator Co
FIREBAN—Taylor Fibre Co
FIREFLY—Northern Light Co
FIREYE—Electronics Corp Of America
FIRMA—Hirschman-Pohle Co Inc
First Lamp Corp—see Penetray Corp
Fischer & Porter Co 335 Warminster Rd Hatboro Pa
Fisher Berkeley Corp 1475 Powell St Emeryville Calif
Fisher-Pierce Co 170 Pearl St South Braintree 85 Mass
Fisher Research Laboratory Inc 1961 University Ave Palo Alto Calif
5-WAY—Superior Electric Co
FLAME STOP—Phelps Dodge Copper Products Corp
FLAMEGUARD—Minneapolis-Honeywell Regulator Co
FLAMENOL—General Electric Co
FLAMESCENT—Duro-Test Corp
FLASH—Phillips Mfg Co Inc
FLASH-GLD—Tedcar Products Co
FLASHMASTER—Carpenter Mfg Co
Fleron (M M) & Son 1220 Yardley Rd Morrisville Pa
Fletcher Mfg Co Box 246 Englewood Ohio
Fleur-O-Lier Mfrs 2116 Keith Bldg Cleveland 15 Ohio
FLEX-A-PLUG—General Electric Co
FLEX-A-POWER—General Electric Co
FLEX-AIRE—Fedders Corp
FLEX-ARC—Westinghouse Electric Corp
FLEX-ARM—Woodward Machine Co
FLEX-FIT—Charleston Rubber Co
FLEX HERMETIC—Fedders Corp
FLEX-LITE—Aero-Motive Mfg Co
FLEX-LOCK—Keystone Electric Mfg Co
FLEX-PAK—Bogen-Presto Div
FLEX-SAF—Charleston Rubber Co
FLEX-SEAL—Columbia Cable & Electric Corp
FLEX-SHEAR—Marvel Rack Mfg Co Inc
FLEXA-TUBE—Gould-National Batteries Inc
FLEXACON—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
FLEXALARM—Gamewell Co
FLEXALL—Rome Cable Div of Alcoa
FlexAngle Corp 3760 Oakwood Ave (P O Box 2434) Youngstown 9 Ohio
FLEXARAY—Duro-Test Corp
FLEXARM—Art Specialty Co
FLEXARM—Flexo International Corp
FLEXCHRON—Standard Electric Time Co
FLEXFOAM—Columbia Wire & Supply Co
FLEXI-SWITCH—Nankervis (Geo L) Co
FLEXIFONE—DuKane Corp
FLEXIFORMER—Superior Electric Co
FLEXILUGS—Frankel Connector Co
FLEXITE—Markel (L Frank) & Sons
FLEXITORQ—Allis (Louis) Co
FLEXLAB—Standard Electric Time Co
FLEXLEAD—Markel (L Frank) & Sons
FLEXLIFE—Columbia Wire & Supply Co
FLEXO—Art Specialty Co
Flexo International Corp 3720 N Milwaukee Ave Chicago 41 Ill
FLEXO MIKESTERS—Art Specialty Co
FLEXOLON—Tensolite Insulated Wire Co Inc
FLEXON—Flexonics Div
Flexonics Corp—see Flexonics Div
Flexonics Div Calumet & Hecla Inc 450 E Devon Ave Bartlett Ill

FLEVOPRENE—Westwood Cable Corp
FLEXSEAL—Columbia Cable & Electric Corp
FLEXSHIELD—American Electric Cable Co
FLEXSTEEL—National Electric Div H K Porter Co
FLEXSTEEL—Utilities Service Co
FLEXSTRON—Mystik Adhesive Products Inc
FLEXTUNG—Capewell Mfg Co
FLEXWAY—General Electric Co Wiring Device Dept
FLICKER-FLAME—Aerolux Light Corp
FLIGHTRON—Sunbeam Lighting Co
FLIP-SEAL—Rodale Mfg Co Inc
FLIP-TITE—Royal Electric Corp
FLIPON—Westinghouse Electric Corp
FLITE-CHEK—Ramset Fastening System
FLITE-LITE—Nu-Art Lighting & Mfg Co
FLO-LINER—Wheeler Reflector Co
FLO-RITE—Burton Mfg Co
FLO-SIG—New Jersey Meter Co Inc
FLOATING PANEL—Metalcraft Products Co Inc
FLOLIGHT—Hutchison Mfg Co
FLOMATCHER—General Services Co
FLOOR MASTER—Lewis-Shepard Products Inc
FLORAFLOOD—Stebor Div Pyle-National Co
FLORALAMP—Stebor Div Pyle-National Co
FLORALITE—Stebor Div Pyle-National Co
FLORDUCT—National Electric Div H K Porter Co
FLOTECT—Anderson (W E) Inc
FLOW-COLD—Acme Industries Inc
FLOW-MIZER—Acme Industries Inc
FLOW-TEMP—Acme Industries Inc
FLOW-THERM—Acme Industries Inc
Flower (D B) Mfg Co 1217 Spring Garden St Philadelphia 23 Pa
Flower Mfg Co Inc—see Flower (D B) Mfg Co
FLOWER LIGHT—Aerolux Light Corp
FLOWING-LINE—Perfecite Co
FLOWRATOR—Fischer & Porter Co
FLUD-LITE—Stanley Power Tools Div
FLUID SHAFT—Reuland Electric Co
FLUD-LITER—Guth (Edwin F) Co
FLUOMERIC—Duro-Test Corp
FLUOR-DE-LE—Seip (L J) Co
FLUORSINT—Polymer Corp
FLUOR-O-TESTER—Electric Re-Light Co
Fluores-O-Light Co Evans Terminal North Broad St Hillside 5 NJ
Fluorescent Equipment & Mfg Co 5105 Cowan Ave Cleveland 27 Ohio
Fluorescent Equipment Supply Co—see K-B Lighting Mfg Co
Fluorescent Fixtures of California 352 Shaw Rd South San Francisco Calif
FLUORESIGN—Reserve Electric Mfg Co
FLUOROLITE—K-B Lighting Mfg Co
FLUOROSINT—Polymer Corp
FLUR-O-LAMP—Ladbury Co Inc
FLUR-O-LOCKS—Ladbury Co Inc
FLUR-O-LUX—Fullerton Mfg Co
FLURO-SPRAY—Duro-Test Corp
FLUSH CALL—Edwards Co Inc
FLUSDUCT—National Electric Div H K Porter Co
FLUSHLITES—Drake Mfg Co
FLUX-N-SOLDER—Johnson Mfg Co Inc
FLYING FARMER—Line Material Industries
FLYTE—Swing-O-Lite Inc
FOAMFLEX—Phelps Dodge Copper Products Corp
FOAMLINER—Plastoid Corp
FOAMTUBE—Plastoid Corp
FOCALITE—Amplex Corp
FOCUS BEAM—Westinghouse Electric Corp Lamp Div
FOLD-A-WAY—Patent Scaffolding Co Inc
Folsom Co Inc 3104 Oak Lane Dallas 10 Tex
FOOTROL—General Control Co
FORCE-FLD—Trane Co
Forest Electric Co 1001 N 25 Ave Melrose Park Ill
FORLAMP—General Electric Co
FORMBOND—Belden Mfg Co
FORMEX—General Electric Co
FORMEZE—General Cable Corp
FORMLON—General Cable Corp
FORMVAR—Anaconda Wire & Cable Co
Forsberg Mfg Co 125 Seaview Ave Bridgeport 1 Conn
Forston Co 2117-2119 Judiway (P O Box 10231) Houston 18 Tex
Fort Worth Steel & Machinery Co 3600 McCart St (P O Box 1038) Fort Worth 1 Tex
FORTY-SIXTY—Curtis Lighting Div
FORWAY—U S Expansion Bolt Co
FOSTERITE—Westinghouse Electric Corp
Fostoria Corp N Main St Fostoria Ohio
Fostoria Pressed Steel Corp—see Fostoria Corp
FOTA-LITE—Corning Glass Works
Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore
4 in 1—General Electric Co
4 POINT—Nye Tool Co
FOUR-STAR—Johns-Manville
Four Wheel Drive Auto Co—see F W D Corp
Fox Gun Co—see Fox Products Co
Fox Products Co 4720 N 18 St Phila 41 Pa
FRAHM—Biddle (James G) Co
FRAME GATE—Gar Wood Industries Inc
France Mfg Co 10325 Berea Rd Cleveland 2 Ohio
FRANCEFORMER—France Mfg Co
Francolite Co—see Federal Lighting Corp
Frankel Connector Co 27 Vestry St NY 13 NY
Franklin Electric Co Inc 400 E Spring St Bluffton Ind
Frank Engineering Laboratories Inc 207 S 5th St Reading Pa
FRESH'ND-AIRE—Cory Corp
Frick Co Waynesboro Pa
Frick-Gallagher Mfg Co 110 S Michigan Ave Wellston Ohio
FRIGI-START—Duro-Test Corp
Frigid Inc 1250 Rockaway Ave Brooklyn 36 NY

FRIGIDAIRE Div General Motors Corp 300 Taylor St Dayton 1 Ohio
FRIGIDFLEX—Halffield Wire & Cable Div Continental Copper & Steel Industries Inc
FRIGISTAT—Minneapolis-Honeywell Regulator Co Frink Corp 211 63rd St Brooklyn 20 NY
Frisbie (HC) Co 1120 E Pico Blvd Los Angeles 21 Calif
FROG-LEG—Allis-Chalmers Mfg Co
FULL-O-LITE—Fullerton Mfg Co
FULL-O-PEP—Standard Electric Co Inc Fullerton Mfg Co Willard Rd Norwalk Conn
Fullman Mfg Co 1209-1215 Jefferson St Latrobe Pa
Fulton Sylphion Div Robertshaw-Fulton Controls Co Box 400 Knoxville 1 Tenn
Furnas Electric Co 1067 McKee St Batavia Ill
FUSEKING—Monarch Electric Div El-Tronics Inc
FUSETRON—Bussmann Mfg Div McGraw-Edison Co
FUSISTOR—S & C Electric Co
FUSTAT—Bussmann Mfg Div McGraw-Edison Co
FUTURA—Metalcraft Products Co Inc
FUTURLITER—Guth (Edwin F) Co
FYBERID—Wilmington Fibre Specialty Co
FYR-CRY—Fyr-Fyter Co engineered Systems Div
Fyr-Fyter Co Engineered Systems Div P O Box 66 Edison NJ
FYRINDEX—Kidde Ultrasonic & Detection Alarms Div

G

GAC—General Alliance Corp
G-C Electronics Co 400 S Wyman St Rockford Ill
GE—General Electric Co
G-H—Girard Hopkins
G I—General Industries Inc
GL—Liddeen of North Carolina Inc
GM Diesel 13400 W Outer Dr Detroit 28 Mich
GS—General Scientific Equipment Co
GSF—General Steel Fittings Co
GST—Guth (Edwin F) Co
G & W Electric Specialty Co 3500 W 127 St Blue Island Ill
G/W—Interlectric Div El-Tronics Inc
Gaines Collins Co—see Collins Machinery Corp
GALAXY—Arvin Industries Inc
GALAXY—Solar Light Mfg Co
GALV-KROM—Steel City Electric Co
GALVAKOTE—Mark (Clayton) & Co
GALVANOX—Subox Inc
Galvin Mfg Co—see Motorola Communications & Electronics Inc
GALVINOLEUM—Rust-Oleum Corp
GALVITE—Republic Steel Co
Gamewell Co Newton Upper Falls 64 Mass
GAR-LITE—Garcy Lighting Div
GAR-SEE-LITE—Garcy Lighting Div
Gar Wood Industries Inc Wayne Mich
GARAGE-LITE—Woodward Machine Co
Garcy Lighting Div Garcey Corp 2475 Elston Ave Chicago 47 Ill
Garden City Fan Co—see Garden City Fan & Blower Co
Garden City Fan & Blower Co 801 N Eighth St Niles Mich
Garden City Plating & Mfg Co—see Garco Lighting Div
GARDINER—Federated Metals Div American Smelting & Refining Co
Gardner Bender Co 5448 N 24 Pl Milwaukee 9 Wis
Gardner Electric Mfg Co—see Federal Pacific Electric Co
Gardner Neon & Ignition Transformers Inc 1010 38th Ave Oakland 1 Calif
Gardner Products Co Div Detroit Industrial Products Co 15244 Aubrey Detroit 39 Mich
Gaston Power Tools 999 Ridge Rd Thornton Ill
Gates Electronic Co 2090 Barnes Ave Bronx 62 NY
Gateway Engineering Co 3233 W Grand Ave Chicago 51 Ill
GATEWAYDUCT—Gateway Engineering Co
Gator Electric Inc 5105 E 10 Ave Hialeah Fla
GAUGETROL—Automatic Control Co
GEAR-O-MATIC—Franklin Electric Co Inc
GEAREDUCERS—Electra Motors Inc
Gedney Electric Co Americas Bldg Radio City NY 20 NY
GEM—Mallory (PR) & Co Inc
GEM DANDY—Buckels (Chris) Inc
Gem Electric Mfg Co Inc 237 37th St Brooklyn NY
Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich
GEN-AIR—United States Motors Corp
GEN-PRO—General Products Corp
GENCATHENE—General Cable Corp
GENCATROL—General Cable Corp
GENCO—General Bathroom Products Corp
GENEMOTOR—Carter Motor Co
General Alliance Corp 2105 Moore St San Diego Calif
General Bathroom Products Corp 1056 N Wood St Chicago 27 Ill
General Battery and Ceramic Corp Box 1262 Reading Pa
General Blower Co 8642 Ferris Ave Morton Grove Ill
General Cable Corp 730 Third Ave New York 17 NY
General Cable Corp Clifton Conduit Div—see Clifton Conduit Co
General Ceilings Inc—see General Lighting Co

General Cement Mfg Co—see G-C Electronics Co Div of Texton Electronic Inc
General Control Co 1200 Soldiers Field Rd Boston 34 Mass
General Controls Co 801 Allen Ave Glendale Calif
GENERAL-DUCT—Electra Mfg Co
General Electric Co
Air Conditioning Dept Central Air Conditioner Troup Highway Tyler Tex
Chemical & Metallurgical Div Conduit Products Dept 980 Warren Ave Niles Ohio
Circuit Protective Devices Dept 41 Woodford Ave Plainville Conn
Commercial & Industrial Air Conditioning Dept 3 Lawrence St Bloomfield NJ
Distribution Assemblies Dept 41 Woodford Ave Plainville Conn
Industrial Sales Operation 1 River Road Schenectady 5 NY
Laminated Products Dept Coshocton Ohio
Large Lamp Dept Nela Park Cleveland Ohio
Major Appliance Div Room Air Conditioner Dept Appliance Park Louisville 1 Ky
Miniature Lamp Dept Nela Park Cleveland Ohio
Silicone Products Dept Waterford NY
Technical Products Dept Electronics Park Syracuse NY
Weathertron Dept 5 Lawrence St Bloomfield NJ
Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn
Wiring Device Dept 95 Hathaway St Providence RI
General Electric Supply Co 1260 Boston Ave Bridgeport Conn
General Electronic Control Inc—see Electro-Solid Controls Inc
General Floorcraft Inc 3630 Rombouts Ave Bronx 66 NY
General Fountain Co Inc—see General Lighting Co
General Hardware Mfg Co Inc 80 White St NY 13 NY
General Indicator Corp Pardeeville Wis
General Industries Inc 34529 Ford Rd Garden City Mich
General Instrument Rectifier Div 240 Wythe Ave Brooklyn 11 NY
General Insulated Wire Works 69 Gordon Ave Providence 5 RI
General Lamps Mfg Corp—see AOW Corp
General Lighting Co 248 McKibbin St Brooklyn 6 NY
General Luminescent Corp—see Pollak Luminescent Corp
General Metals Inc 858 Goldsboro Greensboro NC
General Products Corp 107 Salem St Union Springs NY
General Radio Co West Concord Mass
General Scientific Equipment Co Limekiln Pike & Williams Ave Philadelphia 50 Pa
General Services Co P O Box 612 Corvallis Ore
General Steel Fittings Co 1321 21st St Racine Wisconsin
General Switch Co 45 Roebeling St Brooklyn 11 New York
GENERALFLOOD—Appleton Electric Co
GENERALITER—Duro-Test Corp
GENESCOPE—Simpson Electric Co
GENIE—Alliance Mfg Co Inc
GEON—Goodrich (B F) Chemical Co
Geophysical Instrument Co—see Georator Corp
GEOPRENE—General Electric Co
Georator Corp Manassas Va
GEORGE—Clark (George P) Div Cragin & Wilkins Co Inc
Geringer & Sons Mfg Corp Peekskill NY
GESCO—General Electric Supply Co
Gets-A-Lite Co 3865 N Milwaukee Ave Chicago 41 Ill
GIANT—Burgess Battery Co
Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif
Gibson Mfg Co 1919 Piedmont Circle N E Atlanta Ga
Gibson Refrigerator Sales Corp 515-615 W Williams St Greenville Mich
GILL—Progress Mfg Co Inc
Gill Glass & Fixture Co Philadelphia 34 Pa
GILL-GLO—Gill Glass and Fixture Co
GIRAFFE—Pitman Mfg Co
Girard-Hopkins 1000 40th Ave Oakland 1 Calif
Gisholt Machine Co 1175 E Washington Ave Madison 10 Wis
GISHOLT MASTERLINE—Gisholt Machine Co
Glade Mfg Co 1632 W 75 Pl Chicago 20 Ill
GLAS-VAR—Electro-Technical Products Div
GLASBAKE—McKee Div
GLASPUN—Atlas Asbestos Co
GLASSEAL—Pyramid Electric Co
GLASSHEAT—Continental Radiant Glass Heating Corp
GLASSURFACED—Kirlin Co
GLASTERRA—Chase & Sons Rd
Glenn Corp 4321 Glenridge Rd Cleveland 21 Ohio
GLAZON—Triangle Conduit & Cable Co Inc
Gleason-Avery Inc 45 Aurelius Ave Auburn NY
Gleason (J L) & Co—see Gleason Reel Corp
Gleason Reel Corp 740 N Plankinton Ave Milwaukee 3 Wis
Glen Co—see M & T Welding Products Corp
Glen Equipment Co—see M & T Welding Products Corp
Glen Roberts Co—see M & T Welding Products Corp
LENDALE—King Refrigerator Corp
Glenn Electric Heater Corp 374 Jelliff Ave Newark NJ
GLIDE-A-LITE—Globe Lighting Products Inc
GLO GUARD—Hubbard & Co
Glo-Lite Instrument Co 152 Watson Ave Newark 12 NJ
GLO-PAINT—Vernaline Products Co
GLO PLUG—Industrial Devices Inc

GLO-RAY—Curtis Lighting Div Curtis-All Brite
GLO-RITE—Phillips (Oscar) Co
Globe Plant (Electronics Div) Carborundum Co Niagara Falls NY
Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio
Globe Lighting Products Inc 1710 Flushing Ave Brooklyn 37 NY
GLOWMASTER—Emerson-Pryne Co
GLOW LITE—Spencer Industries
GLOWLITE—Larco Inc
GLYPITAL—General Electric Co
GO-GETTER—Revolver Co
Godfrey Mfg Co 1633 N Halsted St Chicago 14 Ill
Goetz (J F) Mfg Co 162 South St Hartford Wis
GOLD—Kaiser Aluminum & Chemical Sales Inc
GOLD CROWN—Pioneer Gen-E-Motor Co
GOLD MEDAL—Patent Scaffolding Co Inc
GOLD-O-MATIC—Luxor Lighting Products Inc
Goldak Co Inc 1544 W Glenoaks Blvd Glendale 1 Calif
Goldberg & O'Brien Electric Co—see Ther Electric & Machine Works
GOLDEN-D—Cannon Electric Co
GOLDEN SUNBURST—Globe Lighting Products Inc
GOLIATH—David's Gloves Inc
Good-All Electric Mfg Co 112 W First St Ogallala Neb
Good Mfg Co Inc 1015 N Halsted St Chicago 22 Ill
Goodall Rubber Co 445 Whitehead Rd Trenton NJ
Goodrich (BF) Chemical Co 3135 Euclid Ave Cleveland 15 Ohio
GOPI—Bronze Bearings Inc
Goshen Churn & Ladder Inc Goshen Indiana
GOTHAM—U S Gauge Div
Gotham Lighting Corp 37-01 31st St Long Island City 1 NY
Gould-National Batteries Inc Trenton 7 NJ
GOVOHM—Electric Regulator Corp
GRAB-A-SLAB—Kor-It Co Inc
Graham (Phillip E) Co Inc—see Industrial Electric Switches of Indiana
Graham Mfg Corp 152 Second Ave Needham Hts 94 Mass
GRAIN-ORIENTED—Vickers Inc
GRAMIX—United States Graphite Co
GRATELITE—Guth (Edwin F) Co
Gray Instrument Co 448 Mill Rd Andalusia Pa
Graybar Electric Co Inc 420 Lexington Ave NY 17 NY
Grayco Products 3830 N Kedzie Chicago 18 Ill
Grayhill Inc 551 Hillgrove Ave La Grange Ill
GRE-A-NO—Great Northern Mfg Corp
Great Northern Mfg Corp 1056 N Wood St Chicago 22 Ill
Great Western Div—see Interlectric Div El-Tronics Inc
Green Ball Bearing Co 9518 Cassius Ave Cleveland 5 Ohio
GREEN GUARD—Security Mfg & Contracting Co
Greene (R H) Inc 1201 24th St Oakland 7 Calif
GREENGLIDE—Chambers Master Corp
Greenlee Tool Co 2136 Twelfth St Rockford Ill
Greibach Instruments Corp 315 North Ave New Rochelle NY
GRENADIER—Wakefield Lighting Div
Grieve-Hendry Co Inc 1350 N Elston Ave Chicago 22 Ill
Grinnell Co Inc 260 W Exchange St Providence 2 RI
GRIP-FLEX—Coppersweld Steel Co Wire & Cable Div
GRIP KLIP—Excel Fuse Co
GRIP-KLIPS—Specialties Inc
Grip-Tite Mfg Co 115 W Jefferson St Winterset Iowa
GRIP-TYPE—Thiel Tool & Engineering Co
GRIZEPE—Phelps Dodge Copper Products Corp
GRIPMASTER—Champion DeArment Tool Co
GRIPPO—Barrett Varnish Co
GRIPZIN—Star Expansion
GRIZZLY—Kaiser Aluminum & Chemical Sales Inc
GRIZZLY—Pucel Enterprises Inc
GRO-QUICK—Wrap-On Co
Grote Mfg Co Madison Ind
GROUND-OHMER—Sticht (Herman H) Co Inc
GROUNDOMETER—Borden Engineering Div M J Johnson Aircraft Engineering Co
GROUNDULET—Crouse-Hinds Co
Gruber Bros Inc 90 S First St Brooklyn 11 NY
Gruber Lighting—see Gruber Bros Inc
GRYPHON—Brook Motor Corp
GUARANTEE—Partrick & Wilkins Co
Guaranteed Products Inc—see Shox-Stok Inc
GUARDIAN—Dura Electric Lamp Co Inc
GUARDIAN—General Cable Corp
Guardian Electric Mfg Co 1550 W Carroll Ave Chicago 7 Ill
Guardian Light Co 500 N Blvd Oak Park Ill
GUARDSMAN—West Instrument Corp
Guggemos (K) Co—see Kenworth Co
GUIDE-LINED—Republic Steel Corp
GUIDE RAY—Everwarm Inc
GUILLOTINE—Wachs (EH) Co
GULF STREAM—Signal Electric Div King-Seefey Corp
Gulf Swimming Pool Equipment Co 8623 N New Braunfels Ave San Antonio Tex
Gulton Industries Inc Alkaline Battery Div Metuchen NJ
GUSCO—Gustaveson Inc
Gustaveson Inc 8600 Chestnut St Kansas City 32 Mo
Guth (Edwin F) Co 2615 Washington Blvd St Louis 77 Mo
GUTHLITE—Guth (Edwin F) Co
GUY GRIP—Preformed Line Products Co
Guyan Machinery Co Inc Box 150 Logan W Va
Gwilliam Co 348 Furman St Brooklyn 1 NY
GYMLITE—Stebor Div Pyle-National Co
GYRO-LITE—Swiveller Co Inc
GYROL—American-Standard

H

- H-B Instrument Co American & Bristol Sts Philadelphia 40 Pa
H & H—Arrow-Hart & Hegeman Electric Co
H-P—Hatheway & Patterson Co Inc
HABIR BUS—Phelps Dodge Copper Products Corp
HABIRDUCT—Phelps Dodge Copper Products Corp
HABIRDURE—Phelps Dodge Copper Products Corp
HABIRITE—Phelps Dodge Copper Products Corp
HABIRLENE—Phelps Dodge Copper Products Corp
HABIRLOY—Phelps Dodge Copper Products Corp
HABIRPRENE—Phelps Dodge Copper Products Corp
HAIRSHAW—Phelps Dodge Copper Products Corp
Haco Aluminum Products Co P O Box 128 Littlestown Pa
Haertel (Walter) Co 2840 4th Ave So Minneapolis Minn
Haft & Sons Inc 950 Kent Ave Brooklyn 5 NY
HAFTSON—Haft & Sons Inc
Hagen Mfg Co 104 Walnut St Baraboo Wis
HAIRPINLINE—Swedish Iron & Steel Corp
Halex Die Casting Co 8640 Bessemer Cleveland 27 Ohio
Haley Electronics Co 57 William Street New York 5 New York
Haley (R G) & Co Inc 767 Spitzer Bldg Toledo 4 Ohio
Haley (R G) International Corp Inc—see Haley (R G) & Co Inc
HALF-MILE-RAY—Portable Light Co Inc
HALIDE—Turner Brass Works
Hall (William H) Co Windsor Locks Conn
Halo Lighting Products Inc 4201 Grand Ave Chicago 51 Ill
HAM-R-TOOL—Fastway Fasteners Inc
Hamilton Caster & Mfg Co 1519 Dixie Highway Hamilton Ohio
Hamilton Fan & Blower Co 2644 Colerain Ave Cincinnati 14 Ohio
Hammarlund Mfg Co Inc—see Outercom Electronics Corp
HAMMER-HEAD—Perfecite Co
HAMMER-LOCK—Perfecite Co
HAMMER-SETS—Rawlplug Co Inc
HAMMERKORE—Tilden Tool Mfg Co Inc
HAMMETER—Simpson Electric Co
Hamphen Engineering Corp 99 Shaker Rd East Longmeadow Mass
Hampton Mfg Co Industrial Tape Div 111 Cedar St New Rochelle NY
HAMRFLUTE—Star Expansion
HAMRTWIST—Star Expansion
HAMSWITCH—Mallory (P R) & Co Inc
Han-Kor Inc 9520 Richmond Ave Cleveland 5 Ohio
HAND-I-PHONE—Murdock Corp
HANDI-ARC—Niemi (Frank) Metal Products Inc
HANDI-HEET—Smith Welding Equipment Div
HANDI-SPOOL—Tevco Insulated Wire
HANDI-UNIT—Bernard-Franklin Co Inc
HANDI-TALKIE—Motorola Communications & Electronics Inc
Handling Devices Co Inc 34 Concord Lane Cambridge 38 Mass
Handy Angle Die Lug-All Co 355 Lancaster Ave Haverford Pa
HANDY CRAFT—Westinghouse Electric Corp
HANG-RITE—U S Expansion Bolt Co
HANK'S—Klein (Mathias) & Sons
Hanskraft Co Control Div—see Acro Switch Div
Robertshaw-Fulton Controls Co
Hanovia Lamp Div Engelhard Industries Inc 100 Chestnut St Newark 5 NJ
Hansen Mfg Co Inc RR #1 Princeton Ind
HAPCO—Hubbard & Co
HARBOT—Unimatic Corp
HARD-TUNG—Capewell Mfg Co
Harder (Donald C) Co 2580 K St San Diego 2 Calif
Hardman (H V) Co Inc 571 Cortlandt St Belleville 9 NJ
HARDSET—Hardman (H V) Co Inc
Hardwick Hindle Inc 40 Hermon St Newark 5 NJ
HARDY TOOLS—Interstate Drop Forge Co Special Products Div
Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis
Harold Electric Co 210 E Alder St Walla Walla Wash
Harper Electric Furnace Corp 39 River St Buffalo 2 NY
Hart & Hegeman—see Arrow-Hart & Hegeman Electric Co
HART-LOCK—Arrow-Hart & Hegeman Electric Co
Hart Mfg Co 164 Bartholomew Ave Hartford Conn
Hartford Blower Co—see Sterling Blower Co
Hartzell Propeller Fan Co S Engleat Ave Piqua Ohio
HARTZITE—Hartzell Propeller Fan Co
HARVEL—Minnesota Mining & Mfg Co Irvington Div
HASCO—National Band & Tag Co
Hasco Electric Corp 84 S Water St Byram Conn
Hastings Air Conditioning Co Inc 108 S Colorado Ave Hastings Neb
HATCORONE—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATEMP—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATEX—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATFIELD—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATFLEX—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
Hatheway & Patterson Co Inc 156 County St Mansfield Mass
HATROL—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATSEAL—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HATVINOL—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
HAVEN'S—Klein (Mathias) & Sons
Hawker Siddlely Brush Inc 34-14 58th St Woodside 77 NY
Hayden Twist Drill Sales Co 25205 Ryan Rd Warren Mich
Haydon (A W) Co 4060 Ince Blvd Culver City Calif
Haydon (A W) Co 232 N Elm St Waterbury Conn
Haydon Div General Time Corp 245 E Elm St Torrington Conn
Hayes (C I) Inc 800 Wellington Ave Cranston 10 RI
HAYMOLITE—Sieber Div Pyle-National Co
Hays Mfg Co Automatic Controls Div 12th and Liberty Sts Erie 6 Pa
Hazard Insulated Wire Works—see Okonite Co
HAZARDCHECK—Westline E-Z-Code Div
HAZARDSTRIPE—Westline E-Z-Code Div
HAZEGAGE—Photomation Inc
HEADERDUCT—Walker Brothers
Healy-Ruff Co Water Level Controls Div 2255 University Ave St Paul 14 Minn
HEAT-A-LITE—Nukone Inc
Heat Controller Inc 900 Wellworth Ave Jackson Mich
HEAT KILLERS—Coppus Engineering Corp
Heat-Timer Corp 657 Broadway New York 12 NY
HEATAIRE—Markel Electric Products Inc
HEATMOBILE—Sieberg Mfg Co
Heatmore Inc 651 Driggs Ave Brooklyn 11 NY
HEATSUM—Roberson Inc
HEATUBE—see McGraw-Edison Co Albion Div
Heatube Corp—see McGraw-Edison Co Albion Div
HEET-GRID—Ulanet (George) Co
HEET-X—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
Hein-Werner Corp 1200 National Ave Waukesha Wis
Heinemann Electric Co Pennsylvania Ave & Plum St Trenton 2 NJ
Heintz Electric Co 685 Lawrence St Lowell Mass
HELECON—United States Radium Corp
Heller Bros Co—see Heller Tool Co
Heller Roberts Instruments Corp Industrial Fastener Div 700 Jamaica Ave Brooklyn 8 NY
Heller Roberts Mfg Co—see Heller Roberts Instruments Corp
Heller Tool Co 470 Main St Fitchburg Mass
HELLERGRIP—Heller Roberts Instruments Corp
Helwig Co—see Helwig Carbon Products Inc
Helwig Carbon Products Inc 2550 N 30 St Milwaukee 10 Wis
Helwig Mfg Co—see Interstate Drop Forge Co
HEMINGRAY—Kimbly Glass Co
HEMISPHERE—Penetray Corp
Henderson Electric Co 25 Greenwood Ave East Orange NJ
Henderson-Hazel Corp 4525 W 160 St Cleveland 35 Ohio
Hendrix Wire & Cable Corp Milford NH
HERBRAND—Ulita Div
HERCULES—Duro-Test Corp
HERCULES—Fairfield Industries Inc
HERCULES—Linemaster Switch Corp
HERCULES—Whitman & Barnes Div United Drill & Tool Corp
HERCULON—Dossert Mfg Corp
HERMETEZE—Phelps Dodge Copper Products Corp
Hertner Electric Co—see Keaford Div
HESS BRIGHT—SKF Industries Inc
Hesse Products Co 3800 N Virginia St Reno Nev
Hesse (W A) & Co—see Hesse Products Co
Hessel (W F) Co Inc 74 Beekman St NY 38 NY
Hetherington Inc—see Controls Co of America Control Switch Div
Hevi Duty Electric Co 3002 W Burleigh St (P O Box 563) Milwaukee 1 Wis
Hewitt-Robins 666 Glenbrook Rd Stamford Conn
Hewson (John) Co—see Hewson Co Inc
Hewson Co Inc 115 Maple St Summit NJ
HEX-A-LUME—Solux Corp
Hexacon Electric Co 161 W Clay Ave Roselle Park NJ
HEXCAST—U S Expansion Bolt Co
Hexcel Products Inc 2332 4th St Berkeley 10 Calif
HEXCLAD—Hexacon Electric Co
HEXSEAL—APM-Hexseal Corp
HEYCO—Heyman Mfg Co
Heyman Mfg Co Kenilworth 20 NJ
HI—Holub Industries Inc
HI-AMP—Lenco Inc
HI-ARM—Highway Trailer Industries Inc
HI-BREAK—General Electric Co
HI-CAP—Bussmann Mfg Div McGraw-Edison Co
HI-CORE—Alpha Metals Inc
HI-EF—Kent Lighting Corp
HI-FIELD—Annis (B) Co
HI-FLO—General Controls Co
HI-FLUO—Radiant Lamp Corp
HI-FLUX—Annis (B) Co
HI-HAT—Litzcraft Mfg Co
HI-HEAT—Radiant Lamp Corp
HI-HOIST—Lantz Mfg Co Inc
HI-LAC—Ware Fuse Corp
HI-LO—Industrial Devices Inc
HI-LO—Leviton Mfg Co Inc
HI-LO—Metalcraft Products Co Inc
HI-LO—Slater Electric & Mfg Co Inc
HI-LO-FLEX—AOW Corp
HI-MEG—Dolph (John C) Co
HI-OUTPUT—Westinghouse Electric Corp Lamp Div
Hi Products Inc 7700 Wentworth Ave South Minneapolis 23 Minn
HI-Q-LINE—Sunbeam Lighting Co
HI-RANGER—Mobile Aerial Towers Inc
HI-REACH—Economy Engineering Co
HI-RED—Holub Industries Inc
Hi-Scale Products Corp 132 West 22nd Street New York 11 New York
HI-SPEED—Dockson Corp
HI-SPOT—Radiant Lamp Corp
HI-STRENGTH—Blackburn (Jasper) Corp
HI-SUPERTITE—Engelhard Industries Inc
HI TEMP—Rome Cable Div of Alcoa
HI-THERM—Dolph (John C) Co
HI-TORK—Electro-Mechanical Instrument Co
HI-TREADLITE—Linemaster Switch Corp
HI-TRONIC—Bliss Electronic Corp
HI-TWIST—Holub Industries Inc
HI-VOLT—Industrial Devices Inc
HIBAY—Holophane Co Inc
HIBOND—Hitemp Wires Co
Hickok Electrical Instrument Co 10614 Dupont Ave Cleveland 8 Ohio
HICCYCLE—Chicago Pneumatic Tool Co
Hiersgell Bros—see H-B Instrument Co
HIGH BAY—Curtis Lighting Div
HIGH EFFICIENCY—Westinghouse Electric Corp Lamp Div
HIGH SPEED—Capewell Mfg Co
Highway Trailer Co—see Highway Trailer Industries Inc
Highway Trailer Industries Inc 405 E Fulton St Edgerton Wis
Hill (Walter P) Inc 22183 Telegraph Rd Detroit 19 Mich
Hill Transformer Co—see Delta-Star Electric Div
H K Porter Co Inc
Hillsdale Commutator Co—see Toledo Commutator Co
HILO—Driver (Wilbur B) Co
HILO—Slater Electric Inc
Hilti Inc 360 Fairfield Ave Stamford Conn
Hilti Rapid Fastening Systems—see Hilti Inc
HILUX—Slater Electric Inc
HIMCO—Hopfield Industrial Mfg Co
Hindle Transformer Co Inc Woods Church Rd Flemington NJ
HINJON—Thomas & Betts Co
HIPOT—Peschel Electronics Inc
HIPP—Mueller Electric Co
Hirschman-Pohle Co Inc 300 Lent Ave Le Roy NY
Hitemp Wires Co 1200 Shames Dr Westbury NY
HIWRAP—Hitemp Wires Co
HO—Phelps Dodge Copper Products Corp
Hobart Bros Hobart Square Troy 1 Ohio
HOBBSS—Gould-National Batteries Inc
Hobbs Div Stewart-Warner Corp Yale & Ash Sts (P O Box 358) Springfield Ill
Hoffman Engineering Corp 1050 Tyler St Anoka Minn
HOIST-ALL—Coffing Hoist Div Duff-Norton Co
HOISTER-VAN—Vanguard Mfg Co
HOL-DEM—Electric Service Systems Inc
HOL-TITE—Hoffman Engineering Corp
Holan Corp 4100 W 150 St Cleveland 35 Ohio
Holcor Metal Fabricating & Finishing Corp—see House-Lite Corp
Hold-DEM Electric Fencer Co—see Electric Service Systems Inc
Hold-Heat Products Corp 905 W Belmont Ave Chicago 14 Ill
HOLD-IT—Arro Expansion Bolt Co
HOLD-IT—Madison Equipment Co
HOLD-TITE—Titchener (E H) & Co
HOLDA-LITE—Hoffman Engineering Corp
HOLDFAST—Ludlow Textile Products
HOLDTITE—United States Rubber Co
HOLE-SHOOTER—Milwaukee Electric Tool Corp
HOLEY IRON—Stemco Mfg Co
HOLGUN—Black & Decker Mfg Co
HOLIDAY—Day-Brite Lighting Inc
Hollands Mfg Co—see Erie Tool Works
Hollingsworth (John R)—see Hollingsworth Co
Hollingsworth Co Solderless Terminal Div Box 430 Phoenixville Pa
HOLLOSHAFT—U S Electrical Motors Inc
HOLLYWOOD—Kuehn Mfg Co
Hollywood Number Co—see Electric House Number Co
HOLDFLUX—Holophane Co Inc
Holophane Co Inc 342 Madison Ave New York 17 NY
Holtzer-Cabot Corp 125 Armory St Boston 19 Mass
Holtzer-Cabot Electric Co—see Holtzer-Cabot Corp
Holub Industries Inc 442 Elm St Sycamore Ill
HOLZIN—Star Expansion
HOM-A-LARM—Castle Engineering Co
Homelite Corp—see Homelite Div Textron Inc
Homelite Div Textron Inc 67 Riverdale Ave Port Chester NY
Homer Commutator—see Toledo Commutator Co
HOMOCORD—Raybestos-Manhattan Inc
HOMOFLEX—Raybestos-Manhattan Inc
HONEYGLO—Hexcel Products Inc
HONEYLITE—Hexel Products Inc
Hopax Electric Inc 547 Greenwich St NY 13 NY
Hope Electrical Products Co Inc 27 Long Ave Hillside NJ
Hopfield Industrial Mfg Co P O Box 54 San Rafael Calif
HORIZON—Benjamin Div Thomas Industries Inc
HORNET—Hexacon Electric Co
HORSE HEAD—New Jersey Zinc Co
Hose-McCann Corp—see Hose-McCann Telephone Co Inc
Hose-McCann Telephone Co Inc 25th St & 3rd Ave Brooklyn 32 NY
HOSPITAL-LITE—Swiveller Co Inc
HOSPITALITY LIGHT—Versen (Kurt) Co
Hossfeld Mfg Co 460 W Third St Winona Minn
HOT ROD—Pyrostat Inc
HOTKOTE—Mark (Clayton) & Co
Hotpack Corp Cottman Ave at Melrose St Philadelphia 35 Pa
Hotpoint Div General Electric Co 5600 W Taylor St Chicago 44 Ill
HOTTAP—Burdny Corp

Houghton Laboratories Inc.—see Hysol Corp
 House-O-Lite Corp 5700 S Perry Ave Chicago 21 Ill
 HOW-ELL-DOR—Howell Mfg Co
 Howard Electric Co 1950 Ruby St Melrose Park Ill
 Howard Industries Inc 1760 State St Racine Wis
 HOWARDUCT—Howard Electric Co
 Howell Electric Motors Co 409 N Roosevelt Howell Mich
 Howell Instrument Co—see Howell Instruments Inc
 Howell Instruments Inc 3479 W Vickery Blvd Fort Worth 7 Tex
 Howell Mfg Co 21 N Morehall Rd Paoli Pa
 HOWE'S—Klein (Mathias) & Sons
 Hoyt Electrical Instrument Works Inc 42 Carleton St Cambridge 42 Mass
 Hoyt Mfg Corp Forge Rd Westport Mass
 Hoyt Southern Corp—see Hoyt Mfg Corp
 Hub Electric Co 2255 W Grand Ave Chicago 12 Ill
 HUB MOUNT—Hubbard & Co
 Hubbard & Co 6301 Butler St Pittsburgh 1 Pa
 Hubbard Spool Co—see American Pulley Co
 Hubbell (Harvey) Inc State St & Bostwick Ave Bridgeport 2 Conn
 HUBBELL-TROL—Hubbell (Harvey) Inc
 HUBBELLOCK—Hubbell (Harvey) Inc
 HUBEYE—Hubbard & Co
 HUBRAK—Hubbard & Co
 Hudson Lamp Co 528 Elm St Kearny NJ
 Huenefeld Co Engineered Products Div 2701 Spring Grove Ave Cincinnati 25 Ohio
 Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif
 Hughes Bros Inc Seward Neb
 Hughes Electronics Co 5271 W Jefferson Blvd Los Angeles 16 Calif
 Hughey & Phillips Inc 3200 N San Fernando Blvd Burbank Calif
 Hulthorst Micro Tool Co—see Hulthorst Tools Inc
 Hulthorst Tools Inc 227 Wamba Ave (P O Box 3344) Toledo 7 Ohio
 HUMID-I-METER—Walton Laboratories Inc
 HUMIDOLAIN—Star Porcelain Co
 HUMIDOMIST—Supreme Electric Products Co
 HUMP DRIVE—Thiel Tool & Engineering Co
 Hunt-Pierce Corp 59 Meadow St Milford Conn
 HUNTER—Ray-O-Vac Co
 HUNTER—Waveland Electric Co
 Hunter (H D) & Co—see Hunter Tools
 Hunter Div Robbins & Myers Inc 2500 Frisco Ave Memphis 14 Tenn
 Hunter Fan & Ventilating Co—see Hunter Div Robbins & Myers Inc
 Hunter (R N) Sales Co—see Hunter Tools
 Hunter Tools 9851 Alburts St Santa Fe Springs Calif
 HUNTSMAN—Kedman Co
 Huntsman Welding Shield Co—see Kedman Co
 Huppert (K H) Co 6830 S Cottage Grove Ave Chicago 37 Ill
 HUSH-A-MATIC—Hays Mfg Co
 HUSKY—Price Electric Corp
 Husky Products Inc 5300 Vine St Cincinnati 17 Ohio
 Hussey (CG) & Co 2850 Second Ave Pittsburgh 19 Pa
 Hutchison Engineering Works—see Hutchison Mfg Co
 Hutchison Mfg Co 6609 Avenue U (P O Box 9335) Houston 11 Tex
 HY-A-SIL—Sanford Miller Co Inc
 HY-CAP—Illinois Condenser Co
 HY-ELECTRIC—Kritzer Products Div
 HY-LITE—American Concrete Div
 HY-LITER—Guth (Edwin F) Co
 HY-LOAD—Hyatt Bearings Div General Motors Corp
 HY-RE-FLEC—Globe Lighting Products Inc
 HY-SOL—Charleston Rubber Co
 HY-TAC—Hysol Corp
 HY-TIN—Farrelloy Co
 HY-V—DeBothezat Fans Div
 Hyatt Bearings Div General Motors Corp Harrison NJ
 HYCASTE—Premax Products Div
 HYCRAB—Burdny Corp
 HYDENT—Burdny Corp
 HYDRA-LIFT—Pittman Mfg Co
 HYDRAGRIP—Armstrong-Bray & Co
 HYDRAKOTE—Matfield Wire & Cable Div
 HYDRALLOY—Okun (A L) Co Inc
 HYDRANOID—General Control Co
 HYDRATEMP—Matfield Wire & Cable Div
 HYDRATUBE—Recora Co Inc
 HYDRO-800M—Vanguard Mfg Co
 HYDROELECTRIC—Lift Trucks Inc
 HYDROSEC—Kaiser Aluminum & Chemical Sales Inc
 HYDROSPERSE—Fidelity Chemical Products Corp
 HYDUTY—Davidson Fan Co
 HYFLEX—Minnesota Mining & Mfg Co Irvington Div
 HYGRADE—Markel (L Frank) & Sons
 Hykon Mfg Co 163 E State St (P O Box 923 EP) Alliance Ohio
 HYLINK—Burdny Corp
 HYLUG—Burdny Corp
 Hynes Electric Heating Co 708 Colfax Ave Kenilworth NJ
 HYPER-PURITY GOLD—American Silver Co
 HYPERCORE—Moloney Electric Co
 HYPERSLIP—Westinghouse Electric Corp
 HYPOT—Associated Research Inc
 HYPRESS—Burdny Corp
 HYPRO—Hypro Engineering Inc
 Hypro Engineering Inc 700 39th Ave N E Minneapolis 21 Minn
 HYPRO SMALL TWIN—Hypro Engineering Inc
 HYRAMOTOR—General Controls Co
 Hysol Corp 1100 Seneca Ave Olean NY
 HYPERSYN—Western Gear Corp

HYSPLICE—Burdny Corp
 Hyster Co 2902 N E Clackamas St Portland 8 Ore
 HYSTERSET—Ward Leonard Electric Co
 HYTAP—Burdny Corp
 HYTOOL—Burdny Corp
 HYTORK—Allis-Chalmers Mfg Co
 HYVOLT—Crescent Insulated Wire & Cable Co
 I-EZE—Artistic Lamp Mfg Co Inc
 I-LINE—Allen Cooler & Ventilator Inc
 I A C—Industrial Automation Corp
 IBM—International Business Machines Corp
 IC—Interelectric Div El-Tronics Inc
 IDI—International Devices Inc
 IEFECO—International Electric Fence Co Inc
 IEP—Illinois Edison Porcelain
 IMC—Insulation Mfrs Corp
 IMC Magnetics Corp 570 Main St Westbury NY
 IMP—Pyramid Electric Co
 IPC—Independent Protection Co Inc
 IPF—Industrial Plastic Fabricators Inc
 I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa
 I-T-E Circuit Breaker Co Bulldog Electric Products Div 7610 Jos Campau Detroit Mich
 I-T-E Circuit Breaker Co Greensburg Pa P O Box 98
 I-T-E Circuit Breaker Co Victor Insulators Div Victor NY
 I-T-E Circuit Breaker Co Walker Div P O Box 2384 Station D Atlanta Ga
 ITT Components Div P O Box 412 Clifton NJ
 IXL—Collier Insulated Wire Co
 Ideal Commutator Dresser Co—see Ideal Industries Inc
 Ideal Electric & Mfg Co East First St Mansfield Ohio
 Ideal Industries Inc 5136 Park Ave Sycamore Ill
 IDEALARC—Lincoln Electric Co
 Ideas Inc 214 Iverson Ave Laramie Wyo
 Ilg Electric Ventilating Co 2850 N Pulaski Rd Chicago 41 Ill
 ILG-DUALAIR—Ilg Electric Ventilating Co
 ILG-JET—Ilg Electric Ventilating Co
 ILGETTE—Ilg Electric Ventilating Co
 ILGUENT—Ilg Electric Ventilating Co
 ILGWINDOWAIRE—Ilg Electric Ventilating Co
 ILLINI-HY-CAP—Illinois Condenser Co
 Illinois Condenser Co 1616 N Throop St Chicago 22 Ill
 Illinois Edison Porcelain McGraw-Edison Co 510 N Pearl St Macomb Ill
 Illinois Electric Porcelain Co—see Illinois Edison Porcelain
 Illinois Malleable Iron Co—see Appleton Electric Co
 Illinois Testing Laboratories Inc 420 N LaSalle St Chicago 10 Ill
 Illumitronic Engineering Corp 680 E Taylor Ave Sunnyvale Calif
 Ilco Corp 4730 Madison Rd Cincinnati 27 Ohio
 Ilco Copper Tube & Products Inc—see Ilco Corp
 IMCOR—Insulation Mfrs Corp
 IMMERSATHERM—Mercoind Corp
 IMPACTOOL—Ingersoll-Rand Co
 IMPERIAL—Miller Co
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio
 Imperial Lighting Products Co—see Emerson Imperial Lighting Co
 IMPERIALE—Litecraft Mfg Corp
 IMPERIALITE—Emerson-Imperial Lighting Co
 IMPERVEX—Crescent Insulated Wire & Cable Co
 IMPERVOIL—Crescent Insulated Wire & Cable Co
 IMPROV-A-LITE—General Electric Co
 IN-BILT—Holophone Co Inc
 IN-BUILT—Nutone Inc
 IN-LINE—Link-Belt Co
 INCA—Phelps Dodge Copper Products Corp
 INCA-LIGHTS—Wilson (J A) Lighting
 INCELOID—American Products Mfg Co Inc
 INCH-MARKED—Republic Steel Corp
 INDECO—Industrial Engineering & Equipment Co Inc
 Independent Pneumatic Tool Co—see Thor Power Tool Co
 Independent Products Co—see Independent Protection Co Inc
 Independent Protection Co Inc 1605-07 S Main St Goshen Ind
 Induction Heating Corp 181 Wythe Ave Brooklyn 11 NY
 Induction Motors Corp—see IMC Magnetics Corp
 INDUCTOR—American-Standard
 INDUCTROL—General Electric Co
 INDUCTUNER—Mallory (P R) & Co Inc
 INDUSTRIAL—Miller Co
 INDUSTRIAL AIR—Bertram (Harvey P) Co
 Industrial Automation Corp 2415 W Montrose Ave Chicago Ill
 Industrial Control Panel Co—see Control Panel Corp
 Industrial Development Labs Inc 982 River Rd Edgewater NJ
 Industrial Devices Inc Edgewater 19 NJ
 Industrial Electric & Mfg Co—see McGraw-Edison Co
 Albion Div
 Industrial Electric Reels Inc 1509 Chicago St Omaha 2 Neb
 Industrial Electric Switches of Indiana Box 218 New Augusta Ind
 Industrial Electrical Works Inc—see Industrial Electric Reels Inc

Industrial Engineering & Equipment Co Inc 24 Hanley Industrial Ct St Louis 17 Mo
 Industrial Engravers Inc 130-25 180th St Springfield Gardens 34 NY
 Industrial Instrument Co—see Seely Instrument Co Inc
 Industrial Instruments Inc 89 Commerce Rd Cedar Grove NJ
 Industrial Lamp Corp 14th & Blaine Sts Elkhart Ind
 Industrial Plastic Fabricators Inc Endicott St Norwood Mass
 Industrial Plastic Fittings Co 3891 W 150 St Cleveland 11 Ohio
 Industrial Transformer Corp Gouldsboro Pa
 Industriline Inc—see Cam-Lok Div Empire Products Inc
 INERTAIR—Westinghouse Electric Corp
 INERTEEN—Westinghouse Electric Corp
 INFINIFLEX—Integrated Ceilings & Grilleworks Inc
 INFINILITE—Integrated Ceilings & Grilleworks Inc
 Infra Corp 66 S Main Clarkson Mich
 INFRA-GLOW—Apxetro Products Co
 INFRA-MITE—Apxetro Products Co
 INFRAFLO—Electro-Ray Mfg Co
 INFRA-TUBE—Apxetro Products Co
 Ingersoll-Rand Co 11 Broadway NY 4 NY
 INHIBISOL—Penetone Co
 INKIE—Condi-Lite Corp
 Inland Ladder Co 1914 Stanford St Alameda Calif
 INMANCO—Insulation Mfrs Corp
 INNER-SPRINGS—Urell Inc
 INSA-LITE—Sauerisen Cements Co
 INSANOL—Westinghouse Electric Co
 INSECTO—Solar Electric Corp
 INSOLUSEAL—Anaconda Wire & Cable Co
 INSPECTION LITE—Amplex Corp
 INSPECTOR—Swing-O-Lite Inc
 INST-O-VERSE—Franklin Electric Co Inc
 INSTA-SEAL—Anderson Electric Corp
 INSTA-START—France Mfg Co
 INSTALITE—Century Lighting Inc
 INSTANT HEAT—Emerson-Pryne Co
 INSTANT HEAT—Hexacon Electric Co
 INSTANT HEAT—Wall (P) Mfg Co
 INSTAPAC—Onan Div
 Insto-Gas Corp 998 E Woodbridge St Detroit 7 Mich
 INSTROF—Cope (TJ) Div Rome Cable Corp
 Instrument Laboratories Corp 315 W Walton PI Chicago 10 Ill
 Insul-B-Corp 1369 Industrial Rd San Carlos Calif
 INSUL-LOCK—Anthony (F M) Co
 INSUL-PIN—Graham Mfg Co
 INSULAG—Quigley Co Inc
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill
 INSULINER—Thomas & Betts Co
 INSULINK—Burdny Corp
 INSULPREL—Hubbell (Harvey) Inc
 INSULSEAL—Eagle-Picher Co
 INSULUG—Burdny Corp
 INTAIRE—Westinghouse Electric Corp
 Integrated Ceilings & Grilleworks Inc 11766 W Pico Blvd Los Angeles 64 Calif
 INTENSIO—Appleton Electric Co
 INTER-LINK—Cable Electric Products Inc
 INTER-LINK—Leviton Mfg Co Inc
 INTERREFERENCE FREE—Cold Cathode Lighting Corp
 Interlectric Corp—see Interlectric Div El-Tronics Inc
 Interlectric Div El-Tronics Inc 1401 Lexington Ave Warren Pa
 INTERLOCK—Hubbell (Harvey) Inc
 INTERMATIC—International Register Co
 International Business Machines Corp Times Equipment Div 590 Madison Ave New York 22 NY
 International Crossarm Co Inc—see Haley (R G) & Co Inc
 International Electric Fence Co Inc Box 650 Albert Lea Minn
 International Electric Industries Inc—see Beckley Electric Co Inc
 International Ferromet Inc Ramapo NY
 International Lighting Mfg Co 1825 N 19 St St Louis 6 Mo
 International Metal Hose Co 520 Goodrich Rd (P O Box 149) Bellevue Ohio
 International Oil Burner Co 3800 Park Ave St Louis 10 Mo
 International Paper Co Wood Preserving Div 928 Grand Ave Kansas City 6 Mo
 International Register Co 2620 W Washington Blvd Chicago 12 Ill
 International Seal & Knot Protector Co 58-02 37th Ave Woodside 77 NY
 International Telephone & Telegraph Corp Industrial Products Div 15191 Bldsoe St San Fernando Calif
 International Trailer Co Inc 725 North Point Rd Baltimore 6 Md
 Interstate Drop Forge Co Special Products Div 4053 N 27 St Milwaukee 16 Wis
 Interstate Rubber Products Corp 908 Avila St Los Angeles 12 Calif
 INTRA-CEL—Neo-Ray Products Inc
 INTRA-TEL—General Electric Co
 INTRA-TEX—Neo-Ray Products Inc
 INVERTOLITE—Adjustable Fixture Co
 Invinible Vacuum Cleaner Mfg Co Dover Ohio
 INVISA LINE—Arvin Industries Inc
 INVISIBLE RAY—American District Telegraph Co
 Iona Ventilator Co Inc 2821-29 W Dauphin St Phila 32 Pa
 IONAIRES—Wesix Electric Heater Co
 IONOSTAT—United States Radium Corp
 IONOTRON—United States Radium Corp
 Iron Fireman Electronics Div—see Signet Controls
 IRON MIKE—Arco Mfg Co
 IRONCLAD—Exide Industrial Marketing Div

IRRATHENE—General Electric Co
Irving Varnish & Insulator Co—see Minnesota Min-
ing & Mfg Co Irving Div
Irwin Auger Bit Co 92 Grant St Wilmington Ohio
Isert (John H) Co—see Queen Products Co Inc
ISO GLAS—Nativ Corp
Iso Industries 600 E Turner St Los Angeles 12
Calif
ISOBESTOS—Nativ Corp
ISOFORCE—General Control Co
Isolantite Inc—see Isolantite Mfg Corp
Isolantite Mfg Corp Stirling NJ
ISOLASTANE—Nativ Corp
ISOLITE—United States Radium Corp
ISONEL—Schenectady Chemicals Inc
ISOTERAGLAS—Nativ Corp
ISOVAR—Nativ Corp
IVANHOE—Miller Co
IVCO—Iona Ventilator Co Inc
IVI-SPRAY—Minnesota Mining & Mfg Co Irvington
Div
IVORY-X—Pass & Seymour Inc

J

J-LINE—Lint (Clyde W)
Jack & Heintz Div Siegler Corp P O Box 6719
Cleveland 1 Ohio
Jack & Heintz Inc—see Jack & Heintz Div Siegler
Corp
JACK RABBIT—Hubbell (Harvey) Inc
JACK STACKER—Lewis-Shepard Products Inc
JACKLIFT—Lewis-Shepard Products Inc
JACKSON—Vulcan Electric Co
Jackson Electrical Co 900 W Van Buren St Chi-
cago 7 Ill
Jackson Electrical Instrument Co 124 McDonough St
Dayton 2 Ohio
JAGABI—Biddle (James G) Co
JAKE—Curlee (W F) Mfg Co
Janette Electric Mfg Co LeHigh at Main Sts Morton
Grove Ill
JAQUET—Sticht (Herman H) Co Inc
Jasco Aluminum Products Corp 31 Nassau Terminal
Rd New Hyde Park NY
Jaxev—see Jaxev Electronics
Jaxev Electronics P O Box 646 Redlands Calif
Jay Lighting Mfg Co Inc 23-29 Quincy St Brooklyn
38 NY
JAYCANDESCENT—Jay Lighting Mfg Co Inc
JEEP—Mercury Mfg Co
Jefferson Electric Co 25th & Madison Bellwood Ill
Jeffrey Mfg Co 832 N 4 St Columbus 16 Ohio
Jeffries Transformer Co 610 Turner St Los Angeles
12 Calif
Jensen Inc 9331 Freeland Ave Detroit 28 Mich
Jensen Specialties Inc—see Jensen Inc
Jerrold Electronics Corp Jerrold Bldg 15th & Lehigh
Ave Philadelphia 32 Pa
JET FLUX—All-State Welding Alloys Co Inc
Jet Line Gun Co Inc—see Jet Line Products Inc
Jet Line Products Inc 305 Foster Ave Charlotte NC
JET-STREAM—Signal Electric Div King-Seeley Corp
Jeta Inc Yonkers NY
Jeta Metal Fabricators Inc—see Jeta Inc
JETALETRIC—Jeta Inc
JETPOWER—Jeta Inc
JETSTREAM—Kent Co
JIF—Jordan Industries Inc
JIFF-E-PLUG—Ackerman-Johnson Co
JIFFY—Eagle Electric Mfg Co Inc
JIFFY—Lint (Clyde W)
JIFFY—Minerallac Electric Co
JIFFY OW—Atlas Metal Industries
Jo-Bell Products Inc 5456 W 111 St Oak Lawn
Ill
JO-CLAMP—Jordan Industries Inc
JO-STRAP—Jordan Industries Inc
JOB-SITE—International Trailer Co Inc
JOBMASTER—Ramset Fastening System
Jogan Industries P O Box 254 San Lorenzo Calif
Johns-Manville 22 E 40 St New York 16 NY
Johnson Bronze Co 500 S Mill St New Castle Pa
Johnson Mfg Co Inc 600 Anamosa Rd Mt Vernon
Iowa
JOINTED-ARM—Woodward Machine Co
Joleco Corp 2513 Baldwin St St Louis 6 Mo
JOMANCO—Johns-Manville
Jones Motorola Corp 432 Fairfield Ave Stamford
Conn
JOPCO—Jordan Co
Jordan Co 51st & Merrimack Ave Chicago 38 Ill
Jordan Electric Products Electric Storage Battery Co
P O Box 6266 Cleveland 1 Ohio
Jordan Electrical Mfg Co—see Jordan Electric Products
Jordan Electronic Mfg Co Inc—see Jordan Electronics
Jordan Electronics 121 S Palm Ave Alhambra Calif
Jordan Industries Inc 3030 N W 75 St Miami 47
Fla
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago
9 Ill
Joy Mfg Co Electrical Products Div 338 S Broad-
way New Philadelphia Ohio
JOYBLOCKS—Joy Mfg Co
JUBILEE—Pulman Vacuum Cleaner Corp
JUMBO PLATE—Sierra Electric Corp
JUMBODUCT—National Electric Div H K Porter Co
JUNIOR COMBO—Mole-Richardson Co
JUTE PLUG—Arro Expansion Bolt Co

K

K-B Lighting Mfg Co 2101 Byberry Rd Phila 16
Pa
K & B—Kirk & Blum Mfg Co
K F Industries Inc 230 W Dauphin St Philadelphia
33 Pa
K & H—Krueger & Hudepohl Inc
K-LITE—Kalsan Electric Co Inc
K & M—Keesbey & Mattison Co
K-R—Krus-Rieke
K-RAY-XH—Condi-Lite Corp
K-S-V—Ares Co
K/W—Kaiser Aluminum & Chemical Sales Inc
KA-LUG—Burdry Corp
Kaiser Aluminum & Chemical Sales Inc Kaiser Center
300 Lakeside Dr Oakland 12 Calif
Kalb Fell Laboratories Inc—see Cohu Electronics Inc
Kalsan Electric Co Inc 146 Mott St Oceanside NY
KAM-LOK—Kelek Co
KANGO—Porter-Cable Machine Co
KANTARK—Trico Fuse Mfg Co
KANTLEAK—McCaffrey Mfg & Supply Co
KARAK—Ohio Carbon Co
KARRI-GO—Silent Hoist & Crane Co
KAST-COIL—Hays Mfg Co
KATHANODE—Gould-National Batteries Inc
Kato Engineering Co 1442 First Ave Mankato
Minn
Katolight Corp First Ave at Chestnut (P O Box
891) Mankato Minn
Kauffman Air Conditioning Co 4336 W Pine Blvd
St Louis Mo
Kawner Co Niles Mich
KAY-BEE—K-B Lighting Mfg Co
Kay Electric Co Maple Ave Pine Brook NJ
Kay Lab—see Cohu Electronics Inc
Kayline Co 1241 E 45 St Cleveland 14 Ohio
KAYMOR—Scranton Storage Battery Corp
Kearfott Div General Precision Inc 12690 Elmwood
Ave Cleveland 11 Ohio
KEARNALEX—Kearney (James R) Corp
Kearney (James R) Corp 4236 Clayton Ave St Louis
10 Mo
Keesbey & Mattison Co Butler Ave Ambler Pa
KECO—Kuhlman Electric Co
Kedman Co 233 S Fifth West St Salt Lake City
Utah
KEELITE—McKee Div
KEEN ARC—Becker Bros Carbon Co
KEEN CUT—Becker Bros Carbon Co
KEEN-EDGE—Wiss (J) & Sons Co
Kees (F D) Mfg Co 700 Park Ave Beatrice Neb
Keil (Francis) & Sons Inc—see Trine Mfg Corp
KELCO—Kneisley Electric Co
Kelek Co 59 Davis Ave Norwood Mass
Kellems Co Inc 15 Williams St Stonington Conn
Kellems Products Co—see Kellems Co Inc
Kelly Specialty Co 5958-60 Washington Blvd Chi-
cago 44 Ill
KEN-AIRE—Argo Products Co
Kenbert-Arpag Co 220 Coster St Bronx 59 NY
Kendall Co—see Polyken Sales Div
Kennecott Wire & Cable Div Okonite Co Phillips-
dale Rumford 16 RI
Kent Co Inc 359 Canal St Rome NY
Kent Lighting Corp 500 Johnson Ave Brooklyn 37
NY
Kent Metal Mfg Co Inc—see Kent Lighting Corp
KENTEX—Kent Lighting Corp
KENTLITE—Kent Lighting Corp
Kerrigan Iron Works Co 1033 Herman St Nash-
ville 2 Tenn
Kester Solder Co 4201 Wrightwood Ave Chicago 39
Illinois
Kett Appliance Co—see Kett Tool Co
Kett Tool Co 5055 Madison Rd Cincinnati 27
Ohio
Key-Hak Corp—see Producers & Distributors Inc
Key-Hak Products Co—see Producers & Distributors
Inc
Keyes-Davis Co 89 14th St Battle Creek Mich
KEYNOTE—Edwards Co Inc
KEYSTONE—Diamond Expansion Bolt Co Inc
KEYSTONE—Fullman Mfg Co
Keystone Carbon Co Inc 1935 State St St Marys
Pa
Keystone Electric Mfg Co 2228 E Tioga St Phila
34 Pa
Keystone Lamp Mfg Corp 230 Fifth Ave New York 1
NY
Keystone Mfg Co 23328 Sherwood Rd Warren Michi-
gan
Kichler (L D) Co 2101 Superior Ave Cleveland 14
Ohio
Kidde (Walter) & Co Inc Industrial and Marine Div
459 Main St Belleville 9 NJ
Kidde Ultrasonic & Detection Alarms Div Walter
Kidde & Co Inc 459 Brighton Rd Clifton NJ
Kidde Ultrasonic & Detection Alarms Inc—see Kidde
Ultrasonic & Detection Alarms Div
Kilbury Mfg Co Inc 14529 Hawthorne Blvd Law-
dale Calif
Killark Electric Mfg Co 3940 Easton Ave St Louis
13 Mo
KILOTRON—Electric Arc Inc
Kim Lighting & Mfg Co Inc 1467 N Lidcombe Ave
El Monte Calif
Kimble Glass Co P O Box 1035 Toledo 1 Ohio
Kin Tel Div—see Cohu Electronics Inc
KINAMATIC—General Electric Co Apparatus Sales
Div
KINATROL—General Electric Co Apparatus Sales
Div
Kindorf Co—see Steel City Electric Co
KING—Code Corp
KING—Partrick & Wilkins Co
KING LITE—Rab Electric Mfg Co Inc

King Mfg Corp 3152 W Chicago 22 Ill; Chicago 22
Ill
King Refrigerator Corp 76-02 Woodhaven Blvd Glen-
dale 27 NY
Kington Conley Inc Plainfield NJ
Kinney Electrical Mfg Co 678 Buckeye St Elgin
Ill
Kirel Inc—see Wej-it Expansion Products Inc
Kirk & Blum Mfg Co 3120 Forrer St Cincinnati
9 Ohio
KIRK-KEY—I-T-E Circuit Breaker Co
Kirkland (H R) Co 8 King St Morristown NJ
Kirkwood Carbon Corp 4857 W 130 St Cleveland
35 Ohio
Kirkwood Commutator Corp 4855 W 130 St Cleve-
land 35 Ohio
Kirlin Co 3435 E Jefferson Ave Detroit 7 Michigan
Kisco Co Inc 2414 De Kalb St St Louis 4 Mo
KITCHEN-AIRE—Stewart Industries Inc
KLAMPSWITCH FUZ—Adam (Frank) Electric Co
KLEARCOR—Western Plastics Corp
Klein (Leo) Electronics 8526 Washington Blvd Culver
City Calif
KLEIN-KORD—Klein (Mathias) & Sons
KLEIN-LINE—Klein (Mathias) & Sons
KLEIN-LOK—Klein (Mathias) & Sons
Klein (Mathias) & Sons 7200 McCormick Rd Chi-
cago 45 Ill
Kliegl Bros Universal Electric Stage Lighting Co Inc
321 W 50 St NY 19 NY
KLIEGLIGHT—Kliegl Bros
Kliqite Mfg Co 6822 Lynford St Philadelphia Pa
KLIKSWITCH—General Control Co
Kline Savage Co Inc 163 N Third St Phila 6 Pa
KLIP-BEAM—Cable Electric Products Inc
KLIP-BILT—Frick-Gallagher Mfg Co
KLIPLOK—Trico Fuse Mfg Co
KLIPITITE—Kulka Electric Corp
KLIXON—Metals & Controls Inc
KLONDIKE—Perfelite Co
KLOZ-A-LITE—Slater Electric Inc
Knapp-Monarch Co Bent & Potomac St Louis 16
Mo
Kneisley Electric Co 2501-2509 Lagrange St To-
ledo 3 Ohio
KNI-TRON—Kneisley Electric Co
KNOCK OUT NIBBLER—Hykon Mfg Co
Knopp Inc 1307 66th St Oakland 8 Calif
Knox Porcelain Corp 2706 Mynders Ave (P O Box
2031) Knoxville 1 Tenn
Koch (Paul W) & Co—see Lint (Clyde W)
Koch & Lowy Inc 201 E 34 St New York 16 NY
KODAIR—Sperti Faraday Inc
KODEMASTER—Faraday Inc
Koehler Mfg Co 395 Lincoln St Marlboro Mass
Kohler Co Kohler Wis
Koiled Kords Inc Box K Hamden Conn
KOLDBOND—Columbia Lighting
KOLOR KODE—Guth (Edwin F) Co
KOLORDOT—Guth (Edwin F) Co
Kolton Electric Mfg Co 123 New Jersey Railroad
Ave Newark 5 NJ
Kondur Corp 1040 W 12 St Erie Pa
KONKRETE KORE—Tilden Tool Mfg Co Inc
KOOL-KOIL—Advance Transformer Co
KOOL-SEL—Pyramid Electric Co
KOOLER-AIRE—United States Air Conditioning Corp
KOOLPAK—Sprague Electric Co
Kopex Div Gemmer Mfg Co 6400 Mt Elliott Ave
Detroit Mich
Koppers Co Inc Wood Preserving Div 750 Koppers
Bldg Pittsburgh 19 Pa
Kor-It Co Inc 991 Richard Ave Santa Clara Calif
Kord (Leonard E) Co 2751 N Emerson Ave Indian-
apolis 18 Ind
Kord Mfg Co Inc 4510 White Plains Rd New
York 70 NY
KORDUCT—Johns-Manville
Korfund Co Cantigue Rd Westbury NY
KORKER—U S Expansion Bolt Co
Korns (C C) Co P O Box 483 Johnstown Pa
Kortick Mfg Co 5600 Third St San Francisco 24
Calif
KOTACOL—Induction Heating Corp
KOTE-LITE—Woodward Machine Co
KOVER-ALL—Jordan Industries Inc
KOVER-GARD—Fanner Mfg Co Electrical Products
Div
Krauter & Co Inc 585 18th Ave Newark 3
NJ
KRALASTIC—United States Rubber Co
KRALET—Kraloy/Chemtrol Co
Kraloy/Chemtrol Co Electrical Conduit Div 402
W Central Ave Santa Ana Calif
Kraloy Plastic Pipe Co—see Kraloy/Chemtrol Co
KRANE KAR—Silent Hoist & Crane Co
Kritzer Products Div Peerless of America 5800
N Pulaski Rd Chicago 46 Ill
KROMOVER—All-State Welding Alloys Co Inc
Krueger & Hudepohl Inc 1041 Evans St Cin-
cinnati 4 Ohio
Kuehn Mfg Co 78-80 Shipman St Newark 2 NJ
Krus-Rieke Auburn Ind
Kuhlman Electric Co P O Box 288 Birmingham
Mich
Kulka Electric Corp 633 S Fulton Ave Mount
Vernon NY
Kurman Electric Co 191-193 Newell St Brooklyn
22 NY
KURMELEC—Kurman Electric Co
Kurtzon (Morris) Inc 1420 S Talman Ave Chi-
cago 8 Ill
Kurz & Root Co Inc—see Kurz & Root Sales & En-
gineering Corp
Kurz & Root Sales & Engineering Corp 232 East
North Island St Anniston Wis
KWIK—Dunton (MW) Co
KWIK BAR—Krus-Rieke
KWIKCHANGE—Leviton Mfg Co Inc

KWIK-KALL—Loge Electronics Inc
 KWIK-THERM—Cannon Electric Co
 Kwikheat Mfg Co 3732 San Fernando Rd Glendale
 4 Calif
 KWIKIE—Kwikheat Mfg Co
 Kwikwork—Kwikheat Mfg Co
 Kyoja Fiber Pipe Co 1912 S First St Ironton Ohio

L

LAM Inc 414 Main St Wakefield Mass
 LAM Workshop Inc—see LAM Inc
 L-M—Line Material Industries
 L & P Lighting Box 157 Olive Branch Miss
 L P I—Lighting Products Inc
 L-R Mfg Co—see Ripley Co Inc
 LS-FLOOD—Radiant Lamp Corp
 LAB-HEAT—Blue M Electric Co
 LAB-LITE—Thermolyne Corp
 Labelon Corp Canandaigua NY
 Labelon Tape Co Inc—see Labelon Corp
 LABSTROBE—Berkshire Laboratories
 LACKON—United States Radium Corp
 Laclede Steel Co Arcade Bldg St Louis 1 Mo
 Laduby Co Inc Boston Post Rd (P O Box 88) Bran-
 ford Conn
 LAG SHIELDS—Rawplug Co Inc
 Laganke Electric Co—see Lake Shore Electric Corp
 LAKE—National Time & Signal Corp
 Lake Erie Electric Mfg Inc 2952 W 22 St Erie
 Pa
 Lake Mfg Co 2323 Chestnut St Oakland Calif
 Lake Shore Electric Inc—see Lake Shore Electric
 Corp
 Lake Shore Electric Corp 205 Willis St Bedford
 Ohio
 Lake Shore Electric Mfg Co—see Lake Shore Electric
 Corp
 LAKESHORE—Aitken-Reed Inc
 Lakeshore Industries Div—see Aitken-Reed Inc
 LAKIN—Thomas & Betts Co
 Laminated Plastics Inc—see Glastic Corp
 LAMP-LITER—Luxor Lighting Products Inc
 LAMPLIGHTER—Telsta Corp
 Lancaster Glass Corp Lancaster Ohio
 Lancaster Lens Co—see Lancaster Glass Corp
 LANCE MARKER—Keyes-Davis Co
 Land-Air Inc 7444 W Wilson Ave Chicago 31
 Ill
 Lantz Mfg Co Inc Valparaiso Ind
 Lamp Insulator Co Inc 35 Gilbert St LeRoy NY
 LAQUA—Fidelity Chemical Products Corp
 LaRaus Mfg Co Inc LeRoy NY
 Larco Inc 30 S Park Pl Painesville Ohio
 Larkin Lectro Products Co—see Central Transformer
 Corp
 LaRose (W T) & Associates Inc 31 Ontario St
 Cohoes NY
 Larson Instrument Co 24 Orchard St Tarrytown
 NY
 LaSalle Products Inc—see Markel Electric Products
 Inc
 Lastik Paint Inc 200 S Craig St (Suite 406)
 Pittsburgh 13 Pa
 Lastik Products Co Inc—see Lastik Paint Co
 LATROBE—Fullman Mfg Co
 Lau Blower Co 2027 Home Ave Dayton 7 Ohio
 Laurence (R G) Co Inc 122 Summit St Tenafly
 NJ
 LAVOLAIN—Star Porcelain Co
 LAWCO—Velocity Power Tool Co
 LAWIN-GLO—Line Material Industries
 LAY-CIT—Kearney (James R) Corp
 LAY-IN—Square D Co
 LAYTEX—Kaiser Aluminum & Chemical Sales Inc
 LE CARBONE—Carbone Corp
 LE WACO—Lemmerman Walstedt Co
 Leach Corp 18435 Susana Rd Compton Calif
 LEADER—Keyes-Davis Co
 Leader Lamp Mfg Co 476 Broome St NY 13 NY
 LEAF-LITE LUMINUS—Luminous Ceilings Inc
 LEAK PROOF—Ray-O-Vac Co
 LECTERN—Loge Electronics Inc
 LECTERN-LYRIC—AOW Corp
 LECTRI-LOK—Stebber Div Pyle-National Co
 ELECTROFILTER—McGraw-Edison Co Albion Div
 Lectrohm Inc 5560 Northwest Highway Chicago
 30 Ill
 ELECTRONIC LECTERN—Radio Corp of America
 ELECTRONIC SENTRY—Joy Mfg Co
 Ledex Inc 123 Webster St Dayton 2 Ohio
 LEDLOK—U S Expansion Bolt Co
 Lee-Bert Inc 900 Lapeer St Saginaw Mich
 Lee (Walter) Chemical Corp—see Emerson Plastics Cor-
 poration
 Lee Electric Inc 566 52nd St West New York
 NJ
 Lee Products Co 3 Garvey St Everett 49 Mass
 Leebaw Mfg Co 65 Wayne Ave Youngstown 2
 Ohio
 Leecre-Neville Co 1374 E 51 St Cleveland 3 Ohio
 Leecraft Mfg Co Inc 21-16 44th Rd Long Island
 City 1 NY
 Leeds & Northrup Co 4970 Stenton Ave Phila 44
 Pa
 LEEFLUOR—Emerson Plastics Corp
 Leesaona Corp Warwick RI
 Legion Lighting Co 221 Glenmore Ave Brooklyn 7
 NY
 Lehigh Fan & Blower Co—see Lehigh Fan & Blower Div
 Lehigh Fan & Blower Div Fuller Co Catesauqua Pa
 Leibfried (C H) Mfg Corp 95-101 Guernsey St
 Brooklyn 22 NY
 Leigh Building Products Coopersville Mich

Leitch Engineering Corp—see Leitch-Huard
 Leitch-Huard Corp Stark & Commercial Sts Man-
 chester NH
 LEKOLITE—Century Lighting Inc
 LEKTRO-LOK—Linemaster Switch Corp
 Leland (G H) Inc—see Ledex Inc
 Leland Electric Co 1501 Webster St Dayton 1 Ohio
 Lemmerman Walstedt Co 519 Lincoln Ave NE St
 Cloud Minn
 Lemco Inc 350 W Adams St Jackson Mo
 Lenk Mfg Co Franklin Ky
 LENOX—Day-Brite Lighting Inc
 LENS DRUM—Art Metal Lighting Div
 Leonard Electric Mfg Co 3907 Perkins Ave Cleveland
 14 Ohio
 LEROY—Hirschman-Pohle Co Inc
 LESTERLITE—Transolite Corp
 LeTourneau (RG) Inc 2399 S MacArthur Longview
 Tex
 LEV-O-LET—Leviton Mfg Co Inc
 LEV-O-LITE—Leviton Mfg Co Inc
 LEV-O-LOCK—Leviton Mfg Co Inc
 LEVEL MASTER—Jo-Bell Products Inc
 LEVELWRAP—Continental-Diamond Fibre
 Leviton Mfg Co Inc 236 Greenpoint Ave Brooklyn 22
 NY
 LEVOLIER—McGill Mfg Co Inc
 Lew Electric Fittings Co 627 W Lake St Chicago 6
 Ill
 Lewis Engineering Co 52 Rubber Ave Naugatuck
 Conn
 Lewis-Shepard Products Inc 125 Walnut St Water-
 town Mass
 Lewus Electric Co 1254 W Harrison St Chicago 7
 Ill
 LEXINGTON—Miller Co
 Lexington Electric Products Co Inc 12 Chapel St
 Newark 5 NJ
 LIBERTY—Paine Co
 Liberty Bell Mfg Co—see Miami Carey Div
 Licon Switch & Control Div Illinois Tool Works Inc
 6615 W Irving Pl Rd Chicago 34 Ill
 Lidsen of North Carolina Inc 1000 First St Hayes-
 ville NC
 Lidsen (Gustave Inc)—see Lidsen of North Carolina
 LIFE GUARD—Dorsey (John E) Co
 LIFE GUARD—Westinghouse Electric Corp Lamp Div
 LIFE LINE—Westinghouse Electric Corp
 LIFE-SIZE—Auth Electric Co Inc
 LIFE-TIME—Billings & Spencer Co
 LIFE-TITE—Anderson Electric Corp
 LIFEAMATIC—Sasgen Derrick Co
 LIFE GUARD—United Lighting & Ceiling Co
 LIFE SAVER—Fire Alarm Thermostat Corp
 LIFETIME—Slaters Electric Inc
 Lifetime Industries—see Lighting Products Inc
 LIFT-A-DOR—Alliance Mfg Co Inc
 LIFT STACKER—Allied Mfg & Sales Co
 Lift Trucks Inc 2425 Spring Grove Ave Cincinnati 14
 Ohio
 LIFTAMATIC—Sasgen Derrick Co
 LIFTROL—Automatic Control Co
 LIFTRUK—Silent Hoist & Crane Co
 Light O'Day Mfg Inc 15801 Livernois Detroit 38
 Mich
 Light & Power Utilities Corp—see L & P Lighting
 LIGHT WATCHMAN—Ripley Co Inc
 Lightalarms Inc—see Lightalarms Electronics Corp
 Lightalarms Electronics Corp 10 W Houston St
 New York 12 NY
 LIGHTER LITE—Cable Electric Products Inc
 LIGHTGUARD—Exide Industrial Marketing Div
 Lightguard Electronic Mfg Co Inc 1213 St Emanuel
 Houston 3 Tex
 Lighting Craft Industries—see Grayco Products
 Lighting Dynamics Inc 300 N Baldwin Park Blvd City
 of Industry Calif
 Lighting Products Inc 1549 Park Ave West Highland
 Park Ill
 Lightmore Appliance Corp 76-09 34th Ave Jackson
 Heights 72 NY
 LIGHTNING—Vaco Products Co
 LIGHTNING LIFT—Atlas Overhead Door Co
 Lightning Protection Engineers—see Security Mfg &
 Contracting Co
 Lightning Rod Supply Co Shelton Conn
 Lightolier Inc 346 Claremont Ave Jersey City 5
 NJ
 Lightonics P O Box 7211 Oakland Calif
 LIGHTRON—Condi-Lite Corp
 LIGHTSCAPER—Magni Flood Inc
 LIGHTSCAPER—Shalida Mfg Co Inc
 LIGHTWARDEN—Electric Cord Co
 Lima Electric Motor Co Inc Findlay Road Lima Ohio
 LIMB-LOPPER—Miller-Robinson Co
 LIMIT-LOAD—Buffalo Forge Co
 LIMITAMP—General Electric Co
 LIMITRON—Bussmann Mfg Div McGraw-Edison Co
 LINC-TAW—Lincoln Electric Co
 LINCOLN—Forston Co
 LINCOLN—Sangamo Electric Co
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17
 Ohio
 LINCOLNDUCTOR—Lincoln Electric Co
 LINCOLNTRON—Lincoln Electric Co
 LINCOLNTRON—Sangamo Electric Co
 LINCOLNWELD—Lincoln Electric Co
 LINCWELDER—Lincoln Electric Co
 Lindberg Engineering Co 2450 W Hubbard St Chicago
 12 Ill
 Lindell Electric Control Corp 384 Canal St New
 York 13 NY
 LINE-A-MATIC—Stromberg Div General Time Corp
 LINE-A-SPEDE—Allis (Louis) Co
 LINE-ARC—Square D Co Electric Controller & Mfg
 Div
 Line Electric Co 229 River St Orange NJ
 LINE-FLEX—Perfect-Line Mfg Corp

Line Material Co—see Line Material Industries
 Line Material Industries McGraw-Edison Co 700 W
 Michigan St Milwaukee Wis
 LINE-O-HEAT—Smith-Gates Corp
 LINE-O-LAMPS—Wiremold Co
 LINE-O-LIFE—Carter Motor Co
 LINE-O-METER—Simpson Electric Co
 LINE-VOLT—Industrial Devices Inc
 Linemaster Switch Corp Woodstock Conn
 Link-Belt Co 1700 Prudential Plaza Chicago 1 Ill
 LINKIT—Burdry Corp
 LINOLITE—Frink Corp
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill
 Lintern Corp—see Larco Inc
 Linton (Horace) Div Hess Goldsmith & Co Inc 1400
 Broadway New York 18 NY
 Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles 22
 Calif
 LIQUATITE—Electri-Flex Co
 LIQUID ICE—Cool-ette Inc
 LIQUID TITE—Electrical Fittings Corp
 LITE-A-LITE—Ebert Electronics Corp
 LITE BLOX—Guth (Edwin F) Co
 LITE LINER—House-O-Lite Corp
 LITE-MASTER—Modern Light Co Inc
 LITE MITE—Stocker & Yale Inc
 LITE-N-TUFF—Hamilton Caster & Mfg Co
 LITE-PROBE—Amprobe Instrument Corp
 LITE-UR-WAY—Edco International Corp
 Litecontrol Corp 36 Pleasant St Watertown 72
 Mass
 Litecraft Mfg Corp 100 Dayton Ave Passaic NJ
 LITEKRAFT—Cole (C W) & Co Inc
 LITEMASTER—Art Specialty Co
 LITEMASTER—Flexo International Corp
 LITEMASTER—Globe Lighting Products Inc
 Lithonia Lighting Products Co Box 206 Conyers Ga
 Littlefuse Inc 1865 Miner St Des Plaines Ill
 LITTLE CHAMP—Champion DeArment Tool Co
 LITTLE DEVIL—Ohmite Mfg Co
 LITTLE GIANT—Lenk Mfg Co
 LITTLE INCH—Allico Mfg Co
 LITTLE MAJOR—Arro Expansion Bolt Co
 LITTLE-SIX—Burgess Battery Co
 LITTLE WIZARD—Round (David) & Son Inc
 Littlefield Bros Inc 453 E Pearl St Cincinnati 2
 Ohio
 LIVING-WOOD—Neo-Ray Products Inc
 Lloyd Johnson Co—see Johnson Mfg Co Inc
 LLOYDS—Johnson Mfg Co Inc
 LO-BRITE—Holophane Co Inc
 LO-MED—A E Industrial Div Aircraft Armaments Inc
 LO-I—Fairbanks Morse & Co Electrical Div
 LO-NOZ-LEVEL—Allen Cooler & Ventilator Inc
 LO-OHM—Metropolitan Electric Mfg Co
 LO-VOLT—Industrial Devices Inc
 LO-X—I-T-E Circuit Breaker Co Bulldog Electric
 Products Div
 LO-Z—Metropolitan Electric Mfg Co
 LOAD KING—Yale & Towne Mfg Co
 LOAD-LIFT—American Pulley Co
 LOAD LIFTER—Shaw-Box Crane & Hoist Div Manning
 Maxwell & Moore Inc
 LOAD-MOBILE—American Pulley Co
 LOAD SENTRY—Assembly Products Inc
 LOADBUSTER—S & C Electric Co
 LOADGUARD—R T & E Corp
 LOADMASTER—Lewis-Shepard Products Inc
 LOADSTAR—Fidelity Electric Co Inc
 LOADSTAR—Leland Electric Co
 LOBAY—Holophane Co Inc
 LOBOY—Holophane Co Inc
 LOCK-ON—Eagle Electric Mfg Co Inc
 LOCK-TITE—Thomas & Betts Co
 LOCKLITE—Westinghouse Electric Corp Lighting Div
 LOCKTITE—American Sealants Co
 LOCUST—L & P Lighting
 LODSTAR—Chisholm-Moore Hoist Div
 Loge Electronics Inc 2171 W Washington Blvd Los
 Angeles 18 Calif
 Loge (J M) Sound Engineers—see Loge Electronics Inc
 LOK-A-BLOK—Isco Corp
 LOK-IT—Holub Industries Inc
 LOK-ON—Holub Industries Inc
 LOK-Products Co 5109 San Fernando Rd West Los
 Angeles 39 Calif
 LOKATOR—Edwards Co Inc
 LOKFAST—Stebber Div Pyle-National Co
 LOKTITE—U S Expansion Bolt Co
 London Chemical Co Inc 1535 N 31 Ave Melrose
 Park Ill
 LONG-BELL—International Paper Co
 Long-Bell Lumber Co—see International Paper Co
 LONG LIFE—Goodall Rubber Co
 LONG-LIFE—Marvel Lamp Co
 LONGRIP—Ridge Tool Co
 LOPOHM—Ward Leonard Electric Co
 LOOV-O-LITE—Guth (Edwin F) Co
 Lord-Taber Co Inc—see Castle Engineering Co
 LORRAINE—Carbone Corp
 LOSHAFT—Franklin Electric Co Inc
 LOTEMP—Micro Instrument Co
 LOUVERAY—Duro-Test Corp
 LOUVERLUX—Diffusa-Lite Co
 LOUVRE-IN-THE-ROUND—Neo-Ray Products Inc
 LOUVRON—Lightolier Inc
 LOVEX—Day-Brite Lighting Inc
 LOVOLT—Woodhead (Daniel) Co
 Lovsted (CM) & Co Inc 4000 W Marginal Way
 Seattle 6 Wash
 LOW-PEAK—Bussmann Mfg Div McGraw-Edison Co
 LOXARMOR—Okonite Co
 LOXIN—Star Expansion
 LOXON—McGill Mfg Co Inc
 LOXSWITCH—Denison (RB) Mfg Co
 Loz Jack Co—see Earthworm Boring Machine Inc
 LUCETTE—Versen (Kurt) Co
 Lucifer Furnaces Inc Neshaminy Pa

LUGO—Lukens (Thos F) Metal Co
Ludlow Mfg & Sales Co—see Ludlow Textile Products
Ludlow Textile Products P O Box 101 Needham Heights 94 Mass
LUG-ALL—Handy Angle Div
Lug-All Co—see Handy Angle Div Lug-All Co
LUG-IT—Thomas & Betts Co
Lukens (Thos F) Metal Co Hedley & Bath Sts Philadelphia 37 Pa
LUMA-CEILING—Pittsburgh Reflector Co
Luma Electric Equipment Co 1607 Coining Drive Toledo 1 Ohio
LUMATROL—Micro Balancing Inc
Lumen Inc—see Telex/Lumen Inc
LUMEN-AREA—Electro Lighting Corp
Lumen Inc—see Telex/Lumen Inc
LUMENITE—Collyer Insulated Wire Co
Lumenite Electronic Corp 407 S Dearborn St Chicago 5 Ill
Lumi Dyne Corp 627-39 Banning St Los Angeles 12 Calif
LUMI-FLO—Benjamin Div Thomas Industries Inc
LUMI-PEND—Silvray Lighting Inc
LUMI-POST—Silvray Lighting Inc
LUMIGRID—Solar Light Mfg Co
Luminor Inc 120 N Peoria St Chicago 7 Ill
Luminous Ceilings Inc 3701 N Ravenswood Ave Chicago 13 Ill
LUMIRAIL—Acoustica Associates Inc
LUMIRAMA—Litercraft Mfg Co
LUMITONE—Pollak Luminescent Corp
LUMITRON—Metropolitan Electric Mfg Co
LUNAR—Versen (Kurt) Co
LUNDY—Specialties Inc
LUSTERIZED—American Electric Cable Co
LUSTERLAC—American Electric Cable Co
LUSTRE-BRITE—Water Saver Faucet Co
LUTON—Pacific Electricord Co
LUV-R-LOK—Lighting Products Inc
LUV-TILE—Wilson (J A) Lighting
LUVR-LUMINUS—Luminous Ceilings Inc
LUXAIRE—Pfaff & Kendall
Luxo Lamp Corp Dock St Port Chester NY
Luxor Lighting Products Inc 350 5th Ave New York 1 NY
LUXTROL—Superior Electric Co
LUXWOOD—Woe Light Div Thomas Industries Inc
LYNE-O-LARM—Kiddle Ultrasonic & Detection Alarms Div
LYNN—Vaco Products Co
Lyon Rural Electric Co 2075 Moore St San Diego 12 Calif
LYTECASTER—Lightolier Inc
LYTELITE—Lightolier Inc
LYTESCAPE—Lightolier Inc
LYTESPAN—Lightolier Inc

M

M-SCOPE—Fisher Research Laboratory Inc
ME—Marathon Electric Mfg Corp
M H Standard Co—see Versabar Corp
MP—Murray Mfg Corp
MPAC—Cutler-Hammer Inc
MPW—Miller Co
M S A SHOCKGARD—Mine Safety Appliances Co
M & T—Metal & Thermit Corp
M & T Welding Products Corp 703 37th Ave Oakland Calif
MTC—Flexonics Div
MTC—Marcus Transformer Co Inc
M & W Electric Mfg Co Inc 5 Walnut St (P O Box 350) East Palestine Ohio
MACHETA—Aerofan Fan Co Inc
Machinery Electrification Inc 56 Hudson St Northboro Mass
Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio
MAG-A-TROL—Ward Leonard Electric Co
MAG-EYE—Square D Co
MAGAN-TRAN—Mid-States Welder Mfg Co
MAGCOA—Magnesium Co of America
MAGIC—Standard Portable Cord Co Inc
MAGIC FRAME—Electro Lighting Corp
MAGIC TOUCH—Rodale Mfg Co Inc
MAGIC WAND—Sticht (Herman H) Co Inc
MAGICLITE—Guth (Edwin F) Co
MAGMOTOR—Carter Motor Co
MAGNA—Ainsworth Lighting Inc
MAGNA—Auto Arc-Weld Mfg Co
MAGNA CHARGER—Fox Products Co
MAGNA SET—Precision Thermometer & Instrument Co
MAGNA-TRAN—Mid-States Welder Mfg Co
MAGNA WELDER—Auto Arc-Weld Mfg Co
MAGNAPOWER—Dynamatic Div
MAGNAPULSE—Gemco Electric Co
MAGNATORC—Hansen Mfg Co Inc
Magnatran Inc P O Box 211 Kearny NJ
MAGNATROL—Century Lighting Inc
Magnatrol Valve Corp 61 Fifth Ave Hawthorne NJ
MAGNE-LOOP—Memco Engineering & Mfg Co Inc
MAGNE-SPEED—Magnetic Amplifiers Div
MAGNE-TREATER—Radio Frequency Laboratories Inc
MAGNEBRAKE—Vickers Inc
MAGNECLUTCH—Vickers Inc
Magnesium Co of America 155 SE 10th Ave Hialeah Fla
Magnetic Amplifiers Inc—see Siegler Corp Magnetic Amplifiers Div
Magnetics Inc Box 391 Butler Pa
MAGNETRIP—Zinsco Electric Products
Magnetrol Inc 5300 Belmont Rd Downers Grove Ill
MAGNETTE—Heinemann Electric Co

Magni Flood Inc 50 Crary Ave Mt Vernon NY
MAGNI-WHIRL—Blue M Electric Co
MAGOHM—Electric Regulator Corp
MAIN STREETER—Westinghouse Electric Corp Lighting Div
MAINLINE—Crane (HW) Co
MAINLINER—Westinghouse Electric Corp Lighting Div
Majestic Metal Spinning & Stamping Co Inc 537 Sackett St Brooklyn NY
MAJOR—Gem Electric Mfg Co Inc
Major Equipment Co Inc 4603 W Fullerton Ave Chicago 39 Ill
MAL-LEADS—Arro Expansion Bolt Co
Mall Tool Co—see Remington Arms Co Inc
Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind
MALTESE CROSS—Hewitt-Robins
MANCHEX—Exide Industrial Marketing Div
MANGRID—Driver (Wilbur B) Co
MANHATTAN—Raybestos-Manhattan Inc
Manning (RA) Associates—see Manning (RA) Co Inc
Manning (RA) Co Inc 1810 North Ave Sheboygan Wis
Manning Maxwell & Moore Inc 250 E Main St Stratford Conn
MANSON—Okonite Co
MANULUX—Major Equipment Co Inc
MAPLAC—Chance (A B) Co
Marathon Battery Co P O Box 298 Wausau Wis
Marathon Electric Mfg Corp Wausau Wis
Marathon Special Products Corp 12th & Cranberry Sts Erie Pa
Marbelite Co Inc 179 N 10 St Brooklyn 11 NY
Marble Card Electric Corp—see Marble Electric Corp
Marble Electric Corp Gladstone Mich
Marchand (A) Inc 101 Park Ave New York 17 NY
MARCO—Marvin Electric Mfg Co
MARCO—Progress Mfg Co Inc
Marco Industries 207 S Helena St (P O Box 110) Anaheim Calif
MARCOFLEX—Marco Industries
Marcus Transformer Co Inc Leesville Ave Rahway NJ
MARGLO—Marvin Electric Mfg Co
Marine Electric Co 195 Fremont San Francisco Calif
Marion Electrical Instrument Co—see Minneapolis-Honeywell Regulator Co Precision Meter Div
Mark (Clayton) & Co 1900 Dempster St Evanston Ill
MARK-STAMP—Keyes-Davis Co
MARK-TIME—Rhodes (M H) Inc
MARKARRIER—Premax Products Div Chisholm-Ryder Co Inc
Market Electric Products Inc 145 Seneca St Buffalo 3 NY
Markel (L Frank) & Sons Norristown Pa
Market Forge Materials Handling Equipment—see American Pulley Co
Marks Mfg Co 700 N Carpenter St Chicago 22 Ill
MARKSMAN—West Instrument Corp
Markstone Mfg Co 1531 N Kingsbury Chicago 22 Illinois
Marlou Lights Inc Fanwood NJ
Marquette Electric Switchboard Co 311 N Desplaines St Chicago 6 Ill
MARR—Rattan Mfg Co
Marsh (Jas P) Corp—see Marsh Instrument Company
Marsh Heating Equipment Corp—see Marsh (Jas P) Corp
Marsh Instrument Co 3501 Howard St Skokie Ill
Marsh Refrigeration Equipment Co—see Marsh (Jas P) Corp
Marshall (John) Associates Inc Box 2463 Bridgeport 8 Conn
Martin Fan & Blower Co 4634 W 21st Pl Chicago 50 Ill
Martin Stamping & Stove Co Electric Heater Div P O Box 259 Huntsville Ala
Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio
MARTLITE—Ainsworth Lighting Co
MARVAIR—Muncie Gear Works Inc
MARVEL—Pullman Vacuum Cleaner Corp
MARVEL—United Electric Motor Co
Marvel Fluorescent Mfg Co—see Marvel Lamp Co
Marvel Lamp Co 307 Newark St Hoboken NJ
Marvel Rack Mfg Co Inc 96 43rd Ave N E Minneapolis 21 Minn
MARVELITE—Marvel Lamp Co
Marvin Electric Mfg Co 648 Santa Fe Ave Los Angeles 21 Calif
Marvin Mfg Co—see Marvin Electric Mfg Co
Marviray Inc—see Seaboard Products Corp
Maryland Lava Co Box 127 Bel Air Md
MASCO FONE—Simpson (Mark) Mfg Co Inc
MASCOT—Simpson (Mark) Mfg Co Inc
Mason (LE) Co 98 Business St (Hyde Park) Boston 36 Mass
Massey (A H) Inc 111 3rd St (P O Box 206) Derby Conn
Massey-Ferguson Industrial Div Massey-Ferguson Inc 1009 S West St Wichita 13N Kans
MASTER—Kaiser Aluminum of Chemical Sales Inc
Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio
MASTER-LIGHT—Carpenter Mfg Co
MASTER-MITE—Marsh Instrument Co
MASTER-PRO—Cincinnati Time Recorder Co
MASTER-TEST—Marsh Instrument Co
MASTER-THERM—Marsh Instrument Co
MASTERBEAM—Miroflect Co Inc
Mastercraft Medical & Industrial Corp 94-21 150th St Jamaica 35 NY
Mastercraft Plastics Co Inc—see Mastercraft Medical & Industrial Corp
MASTERLINE—Blonder-Tongue Laboratories Inc
MASTERLINE—Gisholt Machine Co

Masterlite Mfg Co 2758 Kensington Ave Phila Pa
MATCHLESS—Chisholm-Moore Hoist Div
Matthews (W N) Corp—see Chance (A B) Co
Matthews Electric Heater Mfg Co Albertville Ala
Max-A-Loc Inc El Monte Calif
MAX-FLO—Shaw-Perkins Mfg Co
MAX-I-BEAM—Peteico Inc
MAX-RDL—Rollway Bearing Co Inc
MAXAW—Cummins Portable Tool Div John Oster Mfg Co
Maxwell Equipment Co—see United States Air Conditioning Corp
McCabe-Powers Body Co 5900 N Broadway St Louis 15 Mo
McCaffrey Mfg & Supply Co 1840 W 14 St Chicago 8 Ill
McCARTHY—Salem Tool Co
McCarthy Electric Co 9640 Grinnell Detroit 13 Mich
McColpin-Christie Corp—see Christie Electric Corp
McCorkle (D H) Co Box 97 Station A Berkeley Calif
McDermott (Julian A) Corp 1639 Stephen St Ridgewood 27 NY
McDonald Mfg Co—see Sierra Electric Corp
McDonnell & Miller Inc 3500 N Spaulding Ave Chicago 18 Ill
McFadden Lighting Co Inc 128 E Kraus St St Louis 11 Mo
McFarland (L D) Co McFarland Bldg Sandpoint Idaho
McGill Mfg Co Inc Valparaiso Ind
McGraw-Edison Co Albion Div 704 Clark St N Albion Mich
McK—McKinley (Ben P) Co
McKee Div Jeannette Glass Co Jeannette Pa
McKee Glass Co—see McKee Div
McKinley (Ben P) Co 522 S Clinton St Chicago 7 Ill
McKinley-Mockenhaupt Co—see McKinley (Ben P) Co
McKinstry Metal Works Inc 285 McKinstry Ave Chicopee Mass
McLarty Systems 2600 Dickman Rd Battle Creek Mich
McLean Engineering Laboratories 70 Washington Rd (P O Box 228) Princeton NJ
McMillan Mfg Co 310 Broadway St Paul 1 Minn
McPhibben Mfg Co Inc 1329 Willoughby Ave Brooklyn 37 NY
Mechanical Industries Production Co—see Thermal Engineering & Design Co
MECHANICAL MAN—Up-Right Inc
Mechanical Products Inc 1824 River St Jackson Mich
MECHOHM—Electric Regulator Corp
MECO—Marine Electric Co
Meco Metal Box & Panel Mfg Co Inc 2522 W Huntington St Phila 32 Pa
MEDALIST—Minneapolis-Honeywell Regulator Co
MEGGER—Biddle (James G) Co
MEGOHM TEST—Davenport Mfg Div Duncan Electric Co Inc
MEGOHMER—Sticht (Herman H) Co Inc
Meier Div Lau Blower Co 3525 E Washington St Indianapolis 7 Ind
Meier Electric & Machine Co Inc—see Meier Div Lau Blower Co
Meierjohan-Wengler 1102 W 9th St Cincinnati 3 Ohio
MEK—Machinery Electrification Inc
MEKONTROL—Machinery Electrification Inc
MELL-O-RAY—Eagle Electric Mfg Co Inc
MELOCALL—Edwards Co Inc
MELODY BELL—Cable Electric Products Inc
Melrose Lighting Co Inc Fort Washington Industrial Park Fort Washington Pa
MEMCO—Miller Electric Mfg Co
Memco Engineering & Mfg Co Inc Commack LI NY
MEMO-CORDER—Hughes Aircraft Co
MEMO-SCOPE—Hughes Aircraft Co
MEMOTRON—Hughes Aircraft Co
Mend-It Sleeve Mfg Co 3125 Gloria Terrace Lafayette Calif
Mendelson (L) Co Inc Furlong Pa
Mephisto Tool Co Inc Box 16 Hudson NY
MERC-ALARM—Tigerman Engineering Co
MERC-ANATIC—Tigerman Engineering Co
MERCFLOOD—Appleton Electric Co
MERCHANT—Miller Co
MERC—Corona Mfg Corp
MERC-O-FLOOD—Radiant Lamp Corp
MERC-O-LITE—Great Northern Mfg Corp
MERC-O-SPOT—Radiant Lamp Corp
MERC-O-WHITE—Radiant Lamp Corp
Merco Corp 4201 W Belmont Ave Chicago 41 Ill
MERCONTROL—Merco Corp
MERCUR-LITE—Stern Industries
MERCURY—General Control Co
MERCURY—Vulcan Electric Co
Mercury Hydraulics 1632-46 Wazee St Denver 2 Colo
Mercury Mfg Co 4700 W Division St Chicago Ill
Mercury Products Inc Boston Post Rd Guilford Conn
Merwin Mfg Co 19th & German Sts Erie Pa
MET—Metropolitan Electric Mfg Co
METAL MASTER—Wiss (J) & Sons Co
METAL ROLLING—American Silver Co
Metal & Thermit Corp Rahway NJ
METALCEL—Fannon (John J) Products Co
Metalcraft Products Co Inc 6225 State Rd Philadelphia 35 Pa
Metalcrafts Inc 627 Greenwich St New York 14 NY
METALEX—Willard Sales
Metals & Control Div Texas Instruments Inc—see Metals & Controls Inc
Metals & Controls Inc 34 Forest St Attleboro Mass
METARAY—Wiegand (Edwin L) Co

METCO LIGHTING—Metalcraft Products Co Inc
 METEOR—Associated American Winding Machines Inc
 METEOR—Chisholm-Moore Hoist Div
 METEOR—Metalcraft Products Co Inc
 METEOR—Wheeler Reflector Co
 Meteor Electric Co Inc—see Leviton Mfg Co Inc
 Meteor Mfg Corp Emporium Pa
 Meter Devices Co 1001 Prospect Ave SW Canton 6 Ohio
 METER-MATIC—International Register Co
 METER-MATIC—Leitch-Huard Corp
 METER-RITE—System Analyzer Corp
 Meters Inc 5353 N Keystone Ave Indianapolis 20 Ind
 METL-CAN—Pyramid Electric Co
 METOHM—Ward Leonard Electric Co
 Metrolite Mfg Co 1000 N Division St Peekskill NY
 Metron Instrument Co 5300 S Delaware St Littleton Colo
 Metropolitan Device Corp—see Murray Mfg Corp
 Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 5 NY
 Metropolitan Switchboard Co—see Metropolitan Electric Mfg Co
 Meyer Machine Inc Red Wing Minn
 Miami Cabinet Div Philip Carey Mfg Co 1700 Grand Ave Middletown Ohio
 Miami Carey Div Philip Carey Mfg Co Middletown Ohio
 Mica Fabricating Co 53 Central Ave Rochelle Park NJ
 MICA-GLAS—National Electric Coil Div
 Mica Products Mfg Co—see Mica Fabricating Co
 MICABOND—Continental-Diamond Fibre
 Micacraft Products Inc 701-03 McCarter Highway Newark 5 NJ
 MICEPAK—Electric Products Co
 Michigan Fluorescent Light Div 393 Orchard Lake Ave Pontiac Mich
 Michigan Oven Co 420 Brainard Detroit 1 Mich
 Micro Instrument Co 80 Trowbridge St Cambridge 38 Mass
 MICRELAY—Ebert Electronics Corp
 Micro Balancing Inc 191 Herricks Rd Garden City Pa NY
 MICRO-LITE—Burton Mfg Co
 MICRO/MINI/COAT—Wilbur & Williams Co Inc
 MICRO-MOTOR—Redmond Co Inc
 MICRO-NAMIC—Micro Balancing Inc
 MICRO-ONM—Superior Electric Co
 MICRO POWER—United States Motors Corp
 Micro Switch Corp—see MICRO SWITCH Div
 MICRO SWITCH Div of Minneapolis-Honeywell Regulator Co Chicago & Springfield Ill
 MICROFIN—Wiegand (Edwin L) Co
 MICROFLO—General Control Co
 MICROLOY—Capewell Mfg Co
 MICRONAIRE—Raytheon Mfg Co
 MICROSTAT—Kent Co Inc
 MICROTESTER—Simpson Electric Co
 MID-JET—Electro Devices Inc
 MID-RIP—General Cable Corp
 Mid-State Welder Mfg Co 6025 S Ashland Ave Chicago 36 Ill
 Mid-West Chandler Co 15th & Gentry (P O Box 7365) North Kansas City 16 Mo
 MIDE-RAV—Duray Fluorescent Mfg Co
 MIDG-O-MATIC—Hays Mfg Co
 MIDGET—Swiveller Co Inc
 Midget Heater & Specialty Co 2801 Pacific Ave Tacoma 4 Wash
 MIDGET KING—Yale & Towne Mfg Co
 MIDGET-RAY—Duray Fluorescent Mfg Co
 MIDGET TALK—Simpson (Mark) Mfg Co Inc
 MIDGETTESTER—Simpson Electric Co
 Midland Industrial Div Harrison Paint & Varnish Co 1329 Harrison Ave SW Canton 1 Ohio
 Midland Paint & Varnish Co—see Harrison Paint & Varnish Co
 Midland Wire Corp—see Parant Wire & Cable Div Essex Wire Corp
 Midwest Electric Mfg Co 1639 Walnut St Chicago 12 Ill
 Midwest Electric Products Inc 1515 N Front St Mankato Minn
 Midwest Lighting Products Co P O Box 536 Edgewater Branch Cleveland 7 Ohio
 MIGHTY MIDGET—Coffing Hoist Div
 MIGHTY MIDGET—Stanley Power Tools Div
 MIGHTY-MITE—Cellheat Inc
 MIGHTY MITE—Remington Arms Co Inc
 MIGHTY-MITE—Thermal Engineering & Design Co
 MILESTONE—Jefferson Electric Co
 MILFORD—Thompson (Henry G) & Son Co
 MILL-O-MATIC—Luxor Lighting Products Inc
 Miller Co Illuminating Div 99 Center St Meriden Conn
 Miller (Sanford) Co—see Sanford Miller Co Inc
 Miller Electric Co 120 Main St Pawtucket RI
 Miller Electric Mfg Co 718 S Bounds St Appleton Wis
 Miller Equipment Co Inc 13th & New Streets Franklin Pa
 Miller Harris Instrument Co 1134 S First St Milwaukee 4 Wis
 Miller (T R) Mill Co Inc Brewton Ala
 Miller-Robinson Co 7007 Avalon Blvd Los Angeles 3 Calif
 Millerbernd Mfg Co Winsted Minn
 Millers Falls Co 57 Wells St Greenfield Mass
 MILLI-V-METER—Howell Instruments Inc
 MILLITE—Westinghouse Electric Corp Lighting Div
 Milos System Devices—see United States Petroleum Co
 MILWAUKEE—Northern Light Co
 Milwaukee Electric Tool Corp 5368 W State St Milwaukee 8 Wis
 Milwaukee Metal Spinning Co—see Spincraft Inc

Milwaukee Parts Corp 607-15 S Sixth St Milwaukee 4 Wis
 MIN-A-CLIPS—Mineralac Electric Co
 MINALITH—Koppers Co Inc Wood Preserving Div
 Mine Safety Appliances Co 201 N Braddock Ave Pittsburgh 8 Pa
 MINEON—Drake Mfg Co
 MINERALIGHT—Ultra-Violet Products Inc
 Mineralac Electric Co 25 N Peoria St Chicago 7 Ill
 Mines Equipment Co—see Joy Mfg Co Electrical Products Div
 MINI BREAKER—Mechanical Products Inc
 MINI-CELL—Neo-Ray Products Inc
 MINI-GATOR—Mueller Electric Co
 MINI-ISOLATOR—Jawex Electronics
 MINI-LARM—Russell & Stoll Co Inc
 MINI-MARKER—Westline E-Z-Code Div
 MINI-PLATES—Jawex Electronics
 MINI-SOCKET—Jawex Electronics
 MINI-TIPS—Ungar Electric Tools
 MINI-VOLT—Industrial Devices Inc
 MINICUBE—Fullerton Mfg Co
 MINIRELAY—Ebert Electronics Corp
 MINISTRIP—Ward Leonard Electric Co
 MINIVECTOR—Spartan Electric Radiator Corp
 Minneapolis Electric & Construction Co 45 Glenwood Ave Minneapolis 3 Minn
 Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn
 Minneapolis-Honeywell Regulator Co Boston Div 40 Life St Boston 35 Mass
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windram Aves Phila 44 Pa
 Minneapolis-Honeywell Regulator Co Precision Meter Div Grenier Field Manchester NH
 Minnesota Mining & Mfg Co Electrical Products Div 900 Bush Ave St Paul 6 Minn
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn
 MINNY-TWIST—Mineralac Electric Co
 MINUTE MOUNT—Progress Mfg Co Inc
 MIRAC-O-LITE—Cutler Light Mfg Co
 MIRACLE—Okun (A L) Co Inc
 MIRACO—Mitchell Rand Mfg Corp
 MiroFlector Co Inc 40 Bayview Ave Inwood LI NY
 MIROHAT—MiroFlector Co Inc
 MIROLITE—MiroFlector Co Inc
 Mirro Co—see Aluminum Co of America
 MIRRORSCOPE—Simpson Electric Co
 Misener Mfg Co Inc 202-208 Walton St Syracuse 2 NY
 Miskella Infra-Red Co E 73rd & Grand Ave Cleveland 4 Ohio
 MISSILITE—Marco Industries
 MISSING LINK—Mid-State Welder Mfg Co
 Mission Western Engineers Inc—see Western Gear Corp
 Mitchell Industries Inc Box 610 Municipal Airport Mineral Wells Tex
 Mitchell Lighting Div Compco Corp 1800 N Spaulding Ave Chicago 47 Ill
 Mitchell Mfg Co 3200 W Peterson Ave Chicago 45 Ill
 Mitchell Moulding Co 1501 Circle Ave Forest Park Mich
 Mitchell Rand Insulation Co—see Mitchell Rand Mfg Corp
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY
 MITCO—Mitchell Moulding Co
 MITEE—International Electric Fence Co Inc
 MITEE—Sunshine (John) Chemical Co Inc
 MITI-MAST—Utility Service Co Inc
 MIX-A-PHONE—Simpson (Mark) Mfg Co Inc
 MIXED-FLO—Broan Mfg Co Inc
 MO-DE-CO—Modern Development Co
 MO-FLEX—Modern Light Co Inc
 MOBIL BREEZE—Frigid Inc
 Mobile Aerial Towers Inc 1730 N Harrison St Fort Wayne Ind
 MOBILEX—Day-Brite Lighting Inc
 Mobilite Div Standard-Thompson—see Carpenter Mfg Co
 MOBILRAIL—Century Lighting Inc
 MOCO—Michigan Overhead Co
 MODERN-AIRE—Southern New England Ultraviolet Co
 Modern Development Co Box 196 Encino Calif
 Modern Electric Laboratory—see Blue M Electric Co
 Modern Light Co Inc 7809 Maplewood Industrial Court St Louis 17 Mo
 Modern Light & Equipment Co 3812 S Wabash Ave Chicago 53 Ill
 MODERN-LITE—Modern Light & Equipment Co
 Modern Pool Products Inc 1 Holland Ave White Plains NY
 Modern Swimming Pool Co Inc—see Modern Pool Products Inc
 Modern Telephone Corp—see Roche (Paul C) Co Inc
 MODERNAIRE—Electro Lighting Corp
 Modernheat Cable Corp P O Box 754 Kingsport Tenn
 MODU-AIRE—United States Air Conditioning Corp
 MODU GLO—Marvin Electric Mfg Co
 MODU-LUMINUS—Luminous Ceilings Inc
 MODU-WAVE—Sclaky Bros Inc
 MODULAIRE—Modern Light Co Inc
 MODULAR—Couch (S H) Co Inc
 MODULITE—Electronic Control Corp
 MODULITE—Major Equipment Co Inc
 MODULITE—Marco Industries
 MODULUME—LAM Inc
 MODULUX—Diffusa-Lite Co
 MODUTROL—Minneapolis-Honeywell Regulator Co
 Moe Light Div Thomas Industries Inc 207 E Broadway Louisville Ky
 MOHAWK—Frigid Inc
 MOHAWK—Surrette Storage Battery Co Inc

MOIST-O-GRAPH—Minneapolis-Honeywell Regulator Co Industrial Div
 MOISTURE MAGNET—Remington Corp
 Molco Drilling Machines Inc—see Ammo Products
 Moldcast Mfg Co 236 South St Newark 14 NJ
 MOLOCHILL—Capewell Mfg Co
 MOLE—Burdry Corp
 Mole-Richardson Co 937 N Sycamore Ave Hollywood 38 Calif
 MOLECU-DRYER—Hayes (C I) Inc
 MOLEFLECTOR—Mole-Richardson Co
 MOLEVATOR—Mole-Richardson Co
 MOLIMITER—Burdry Corp
 Molly Corp 230 N Fifth St Reading Pa
 Moloney Electric Co 5390 Birch Blvd St Louis 20 Mo
 MON-O-LAG—Monarch Electric Div El-Tronics Inc
 Mona Industries Inc Paterson 1/ NJ
 MONAMINE—Mona Industries Inc
 Monarch Electric Corp—see Monarch Electric Div El-Tronics Inc
 Monarch Electric Div El-Tronics Inc 118 E First St Jamestown NY
 Monarch Fuse Co Ltd—see Monarch Electric Div El-Tronics Inc
 Monarch Lighting Fixtures Corp—see Ender-Monarch Corp
 MONASTRIP—Mona Industries Inc
 Monitor Controller Co—see Monitor Controller Div Atlee Corp
 Monitor Controller Div Atlee Corp 99 Grove St Rockland Mass
 MONITROL—Monitor Controller Div Atlee Corp
 MONO-BOLT—Chance (A B) Co
 MONO MOTOR—Redmond Co Inc
 MONOGRAM—Refrigerating Specialties Co
 MONOLARM—Russell & Stoll Co Inc
 MONOPOINT—Gotham Lighting Corp
 MONOWELD—All-State Welding Alloys Co Inc
 MONSON—Portland-Monson Slate Co
 Moon Mfg Co 108 N Jefferson St Chicago 5 Ill
 MOORE—Chisholm-Moore Hoist Div
 MORELITE—Rambusch Decorating Co
 MORPHO—Cannon Electric Co
 Morrison Steel Products Inc 601 Amherst St Buffalo 7 NY
 Morrow Co 400 W Madison St Chicago 6 Ill
 Morse (Frank W) Co 354 Congress St Boston 10 Mass
 Morse Chain Co Borg Warner Corp Ithaca NY
 Mossman (Donald P) Inc P O Box 265 Brewster NY
 MOTHER'S HELPER—Simpson (Mark) Mfg Co Inc
 MOTION—Progress Mfg Co Inc
 MOTO-LIFT—Safway Steel Products Inc
 MOTO-MITE—Globe Industries Inc
 Moto-Trac Co 1953 E 59 St Cleveland 3 Ohio
 MOTODRIVE—Reeves Pulley Div Reliance Electric & Engineering Co
 MOTOGEAR—Link-Belt Co
 MOTOMOUNT—U S Electrical Motors Inc
 MOTOR ARMOR—Waveland Electric Co
 MOTOR GARD—Bell Electric Co
 Motor Generator Corp—see Hobart Bros
 MOTOR SENTINEL—Bryant Electric Co
 Motor Specialty Inc 2801-17 Lathrop Ave Racine Wis
 Motor X Products Co—see Industrial Electric Switches of Indiana
 MOTORDOR—Broan Mfg Co Inc
 MOTORUCERS—Falk Corp
 Motoresearch Co 1600 Junction Ave Racine Wis
 MOTORLITE—Ward Leonard Electric Co
 Motorola Communications & Electronics Inc 4501 W Augusta Blvd Chicago 51 Ill
 MOTORTRON—Bussmann Mfg Div McGraw-Edison Co
 MOTOTROL—Automatic Control Co
 MOTRAC—Motorola Communications & Electronics Inc
 MU-STAT—Precision Thermometer & Instrument Co
 Mueller Climatrol Div Worthington Corp 2005 W Oklahoma Ave Milwaukee 1 Wis
 Mueller Electric Co 1555G E 31 St Cleveland 14 Ohio
 Mueller (L J) Furnace Co—see Mueller Climatrol Div
 Mullenbach Electrical Mfg Co—see Mullenbach Div Mullenbach Div Electric Machinery Mfg Co 2100 E 27 St Los Angeles 58 Calif
 Multi-A-Frame Corp 6401 Epworth Blvd Detroit 10 Mich
 Multi-A-Frame Div Ainsworth Precision Castings—see Multi-A-Frame Corp
 MULTALARM—Automatic Control Co
 MULTI—Duro Fittings Co
 Multi-Amp Corp—see MULTI-AMP Div
 MULTI-AMP Div Multi-Amp Electronic Corp P O Box 161 Cranford NJ
 MULTI-BREAKER—Square D Co
 MULTI-CALKS—Rawplug Co Inc
 MULTI-COM—Radio Corp of America
 MULTI-DIAMETER—U S Expansion Bolt Co
 MULTI-DUTY—Emerson Electric Mfg Co
 Multi Electric Mfg Inc 4223 W Lake St Chicago 24 Ill
 MULTI-MOUNT—Blackburn (Jasper) Corp
 MULTI-MOUNT—Guth (Edwin F) Co
 MULTI-SIZE—Diamond Expansion Bolt Co Inc
 MULTI-START—Scranton Storage Battery Corp
 MULTI-TAC—Simpson (Mark) Mfg Co Inc
 MULTI-TAP—Woodhead (Daniel) Co
 MULTI-UNIT—U S Expansion Bolt Co
 MULTI-USE—U S Expansion Bolt Co
 MULTI-VENT—Pyle-National Co
 MULTIFLEX—Helwig Carbon Products Inc
 MULTIFONE—Simpson (Mark) Mfg Co Inc
 MULTIGUARD—Lincoln Electric Co
 MULTIPLE UNIT—Hevi Duty Electric Co
 MULTISCOPIC—Kulka Electric Corp
 MULTISTAK—Lake Shore Electric Corp
 MULTITAP—Anderson (Albert & JM) Mfg Co
 MULTITHERM—Clarage Fan Co

Muncie Gear Works Inc. P O Box 433 Cordele Ga
 Murock Corp 158 Carter St Chelsea 50 Mass
 MUREX—Metal & Thermit Corp
 Murray (D A) Co Inc 632 N Mill St Tipton Ind
 Murray Equipment Co Inc 14011 Oakland Ave De-
 troit 3 Mich
 Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16
 NY
 MUSI-TALK—Fanon Electronic Industries Inc
 Mutual Foundry & Machine Co—see Potter & Rayfield
 Inc
 MY-T-MIDGET—American Rectifier Corp
 Mycalcor Corp of America 125 Clifton Blvd Clifton
 NJ
 Myers Electric Products Inc 3019 S Vail Ave Los
 Angeles 22 Calif
 MYSTIC GRATELITE—Guth (Edwin F) Co
 Mystik Adhesive Products Inc 2635 N Kildare Ave
 Chicago 39 Ill

N

NE—National Electric Div H K Porter Co
 N E BEUD—Burbank Electrical Products
 NEM—National Engineering & Mfg Co
 N J—New Jersey Porcelain Co Inc
 N L Corp 2480 E 22 St Cleveland 15 Ohio
 N T C—Keystone Carbon Co Inc
 N T M—National Tool & Mfg Co
 N W L—Notthelfer Winding Labs Inc
 N W Revolving Portable Elevator Co—see Revolver
 Co
 NAIL-IT—Eagle Electric Mfg Co Inc
 NAILIN—Rawplug Co Inc
 NALCO—National Lead Co
 NALCO—North American Electric Lamp Co
 NALCOBRITE—North American Electric Lamp Co
 Nankervis (Geo L) Co 15300 Fullerton Ave Detroit
 27 Mich
 NARADIRECT—Naragansett Wire Co
 NARADUCT—Naragansett Wire Co
 NARAWIRE—Naragansett Wire Co
 NARAX—Naragansett Wire Co
 Naragansett Wire Co 1125 Main St Pawtucket
 RI
 Natale Machine & Tool Co 339 Highway #17 Carl-
 stadt NJ
 Natco Corp 327 Fifth Ave Pittsburgh 22 Pa
 NATIONAL—General Hardware Mfg Co Inc
 NATIONAL—Gould-National Batteries Inc
 National Acme Co Electrical Controls Div 170 E
 131 St Cleveland 8 Ohio
 National Appliance Co—see Ventrola Mfg Co
 National Band & Tag Co 721 York St Newport Ky
 National Cathode Corp 317 E 34 St New York 16
 NY
 National Decalcomania Corp 56 & Chestnut Sts
 Phila 39 Pa
 National Electric Coil Div McGraw-Edison Co 800
 King Ave Columbus 16 Ohio
 National Electric Controller Co 7070 Glenwood Ave
 Chicago 26 Ill
 National Electric Div H K Porter Co Inc Porter
 Bldg Pittsburgh 19 Pa
 National Electric Welding Machines Co 1846-1916
 N Trumbull St Bay City Mich
 National Electro Dynamics Corp 4917 St Elmo Ave
 Bethesda 14 Md
 National Engineering & Mfg Co 16th & Lamine Sts
 Sedalia Mo
 National Fireproofing Corp—see Natco Corp
 National Lead Co 111 Broadway NY 6 NY
 National Pneumatic Co Inc—see Holtzer-Cabot Corp
 National Poultry Band Co—see National Band & Tag
 Co
 National Price Service—see Henderson-Hazel Corp
 NATIONAL RHEOSTAT—National Electric Controller
 Co
 National Specialties Co Inc 1902 Howell St Ft
 Wayne 7 Ind
 National-Standard Co 601 N 8th St Niles Mich
 National Steel Construction Co 500 S Myrtle St
 Seattle 8 Wash
 National Super Service Co 1946 N 13 St Toledo
 Ohio
 National Supply Co—see Armco Div
 National Tel-Tronics Corp 52 St Casimir Ave Yonkers
 NY
 National Time & Signal Corp 21800 Wyoming Ave
 Detroit 37 Mich
 NATIONAL TIMER—National Time & Signal Corp
 National Tool & Mfg Co 100 N 12 St Kenilworth
 NJ
 National Varished Products Corp—see Natvar Corp
 NATLOOP—National Electric Coil Div
 NATSCO—National Time & Signal Corp
 Natvar Corp 211 Randolph Ave Woodbridge NJ
 NAUTILUS—Linemaster Switch Corp
 Naybor (E V) Laboratories Inc 26 Manorhaven Blvd
 Port Washington NY
 NE-O-LITE—Speedex Mfg Co
 NEASBESTOS—National Electric Div H K Porter Co
 NEATPAK—Federated Metals Div American Smelting
 & Refining Co
 NECCOBOND—National Electric Coil Div
 NEDVCO—National Electro Dynamics Corp
 NELEX—Nelson Electric Mfg Co
 Nelson Distributor Products Div Gregory Industries
 Inc Toledo Ave & East 28 St Lorain Ohio
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla
 Nemco Electric Co 210 Second Ave Seattle 4 Wash

NEMCRAFT—Nemco Electric Co
 NEO-GLO—Markel Electric Products Inc
 Neo-Ray Products Inc 315 E 22 St NY 10 NY
 NEO-SOL—Charleston Rubber Co
 NEO-TIME—Square D Co Electric Controller & Mfg
 Div
 NEODORK—Auburn Mfg Co
 NEOFIL—Bishop Mfg Corp
 NEOLAY—Kaiser Aluminum & Chemical Sales Inc
 NEOLINE—Anaconda Wire & Cable Co
 NEOTEL—General Cable Corp
 NEOTEX—Woodhead (Daniel) Co
 NEOTROL—Square D Co Electric Controller & Mfg
 Div
 NEPCO—National Electric Div H K Porter Co
 NEPCO-LOK—National Electric Div H K Porter Co
 NEPCO-SIL—National Electric Div H K Porter Co
 NEPCODUCT—National Electric Div H K Porter Co
 NEPCONOL—National Electric Div H K Porter Co
 Nepo Mfg Co 4230 N Sayre Chicago 34 Ill
 NEPTUNE—Recora Co Inc
 Nessen Studio Inc 317 E 34 St New York 16 NY
 Network Industries Inc P O Box 397 Bayonne
 NJ
 NEUTRO—Dunton (M W) Co
 NEVA GLARE—Marlow Lights Inc
 NEVER-CREEP—Chance (A B) Co
 NEVER-SLIP—Miller Equipment Co Inc
 New England Carbide Tool Co Inc 55 Commercial St
 Medford 55 Mass
 New England Electrical Works Inc 365 Main St
 Lisbon NH
 New Hampshire Ball Bearings Inc Route 202 Peter-
 borough NH
 New Jersey Fire Alarm Co—see Newark District Tele-
 graph Co
 New Jersey Meter Co Inc 89 Terminal Ave Clark NJ
 New Jersey Porcelain Co Inc Plum St & NY Ave
 (P O Box 908) Trenton 5 NJ
 New Jersey Zinc Co 160 Front St New York 38 NY
 New York Fluorescent Mfg Co Inc 162 Bowery New
 York 12 NY
 Newage Industries Inc 709 Greenwood Ave Jenkin-
 town 41 Pa
 Newage International Inc—see Newage Industries Inc
 Newark District Telegraph Co 372 Plane St Newark
 2 NJ
 Newark Mfg Co—see Valen Mfg Co
 Newcomb Audio Products Co 6824 Lexington Ave
 Hollywood 38 Calif
 Newman Electric Motors Inc 357 Wilson Ave Newark
 5 NJ
 Niagara Transformer Corp 1751 Dale Rd Buffalo
 25 NY
 NIAGRITE—Johns-Manville
 Nicad Div Gould-National Batteries Inc Easthampton
 Mass
 Nichols Wire & Aluminum Co 1725 Rockingham Rd
 Davenport Iowa
 Nickel Cadmium Battery Corp—see Nicad Div
 Niemi (Frank) Metal Products Inc Gurnee Ill
 NIGHTINGALE—Adjustable Fixture Co
 Nikoh Tube Co 5000 S Whipple St Chicago 32 Ill
 NILSTAIN—Driver (Wilbur B) Co
 9000 ARC—Mid-States Welder Mfg Co
 99999 FINE—American Silver Co Inc
 NITE-BEAM—Eagle Electric Mfg Co Inc
 NITE HAWK—Ray-O-Vac Co
 NITE-O-LITE—Hoffman Engineering Corp
 NITEAIR—Lau Blower Co
 NITELIGHTER—Fisher-Pierce Co
 NO FLAME COR—Cornish Wire Co
 NO-LIFT—Self-Lifting Piano Truck Co
 NO-SHOK—Bell Electric Co
 NO-SPARK—Co-operative Utilities Co Inc
 NOBATRON—Sorensen
 NOBLELOY—Continental-Wirt Electronics Corp
 NOBLETTE—Continental-Wirt Electronics Corp
 NOBRUSH—Georator Corp
 NODRSEAL—Johns-Manville
 Noel Mfg Co 3 W 18 St New York 11 NY
 NOFAL—Rite-O-Lite Co
 NOKORODE—Dunton (M W) Co
 NOLO—Auburn Mfg Co
 NON-TAMP—Eagle Electric Mfg Co Inc
 NORBLO—Northern Blower Div
 Nordberg Mfg Co 3073 S Chase Ave Milwaukee 1
 Wis
 NORX—General Hardware Mfg Co Inc
 Norky Mfg Corp P O Box 669 Covington Ky
 NORLICO—Northern Light Co
 Norman Electric Co—see Star-A-Electric Mfg Co Inc
 Normandy Electric Wire Corp 125 Second St Brook-
 lyn 31 NY
 NORPAK—Square D Co
 NORSOLV—Northwoods Mfg Chemists Inc
 North American Electric Lamp Co 1520 North 13th
 St St Louis 6 Mo
 NORTH-LITE—Great Northern Mfg Corp
 NORTH-LUX—Luxor Lighting Products Inc
 North Shore Nameplate Inc—see North Shore Name-
 plate Div Anodyne Inc
 North Shore Nameplate Div Anodyne Inc 1270 N W
 165 St North Miami Beach Fla
 Northbrook Products Inc Industrial Div 624 S
 Michigan Ave Chicago 5 Ill
 Northern Blower Co—see Northern Blower Div
 Northern Blower Div Buell Engineering Co 6434
 Barberton Ave Cleveland 2 Ohio
 Northern Incandescent Lamp Co 1 Newark St
 Hoboken NJ
 Northern Light Co 1661 N Water St Milwaukee 2
 Wis
 NORTHERN LIGHTS—Northern Incandescent Lamp Co
 Northwestern Electric Co 1750 N Springfield Ave
 Chicago 47 Ill
 NORTHWIND—Emerson Electric Mfg Co
 NOSE CONE WEJ-IT—Wej-it Expansion Products Inc
 Northwoods Mfg Chemists Inc Porterfield Wis

Notthelfer Winding Labs Inc 220 Ewingville Rd (P O
 Box 455) Trenton 3 NJ
 Novelty Lighting Corp—see N L Corp
 NOVOID—G & W Electric Specialty Co
 Nu-Art Lighting & Mfg Co 2360 West 21 South Salt
 Lake City 4 Utah
 NU-BLAC—Star Porcelain Co
 NU-BRAZE—American Silver Co Inc
 NU-LITE—Dependable Electric Mfg Co Inc
 NU-WAY—Marshall (John) Associates Inc
 NUARC—Electric Arc Inc
 Nutone Inc Madison & Red Bank Roads Cincinnati
 27 Ohio
 Nutting Truck and Caster Co 1201 W Division St
 Fairbault Minn
 Nye Tool Co 4120-30 Fullerton Ave Chicago 32 Ill
 NYLAFLOW—Polymer Corp
 NYLASINT—Polymer Corp
 NYLATINT—Polymer Corp
 NYLATRON—Polymer Corp
 NYLAWELD—Polymer Corp
 NYLCLAD—Belden Mfg Co
 NYLEZE—Phelps Dodge Copper Products Corp
 NYLINE—Ward Leonard Electric Co
 NYLOX—Hardman (H V) Co Inc
 NYLTENAMER—Belden Mfg Co
 NYTROL—Walker Brothers

O

O-B—Ohio Brass Co
 O-E—Arro Expanding Bolt Co
 OEM—Oliver Electrical Mfg Co
 OK—Appleton Rubber Co Inc
 OK—Eagle Electric Mfg Co Inc
 O K—General Cable Corp
 O-K—Henderson Electric Co
 O P BREAKER—Adam (Frank) Electric Co
 O-PAC—Opad Electric Co
 O-Z—Zernickow (O) Co
 O Z Electrical Mfg Co Inc 262 Bond St Brooklyn 17
 NY
 OAMCO—Overbaugh & Ayers Mfg Co
 OASIS—Ebo Mfg Co
 O'Brien Electric Corp 6514 Santa Monica Blvd
 Hollywood 38 Calif
 OBROUND—Crouse-Hinds Co
 OBSERVER—Blonder-Tongue Laboratories Inc
 OCT-O-DUCT—Soapstone Duct Co
 OCTA-TUBE—Millerbernd Mfg Co
 OCULITE—Burton Mfg Co
 ODDOR-MASTER—Edco International Corp
 ODOROUT—Westinghouse Electric Corp Lamp Div
 Ohio Brass Co 380 N Main St Mansfield Ohio
 Ohio Carbon Co 12508 Berea Rd Cleveland 11 Ohio
 OHIOHM—Ohio Carbon Co
 OHM-SPUN—States Co
 Ohmite Mfg Co 3601 Howard St Skokie Ill
 OHMOID—Wilmington Fire Specialty Co
 OHMSTONE—Johns-Manville
 OILFILTER—Controls Co of America
 OILITE—Amplex Div Chrysler Corp
 OKLIP—Burdry Corp
 OKOCLAD—Okonite Co
 OKOCORD—Okonite Co
 OKOLENE—Okonite Co
 OKOLITE—Okonite Co
 Okonite Co Passaic NJ
 Okonite-Callender Cable Co—see Okonite Co
 OKOPRENE—Okonite Co
 OKOSEAL—Okonite Co
 OKOTHERM—Okonite Co
 OKOVAR—Okonite Co
 Okun (A L) Co Inc 109-02 Van Wyck Expressway
 South Ozone Park NY
 Olin Conductors Metals Div P O Box 989 Chat-
 tanooga Tenn
 Oliver Electrical Mfg Co P O Box 217 Battle Creek
 Mich
 Oliver Iron & Steel Corp—see Oliver Electrical Mfg Co
 OLYMPIC—Lint (Clyde W)
 Olympic Instruments Inc Vashon Wash
 Omak Industries Inc 9701 S E McLoughlin Blvd
 Portland 22 Ore
 OMEGA—Trombetta Solenoid Corp
 Omega Lighting Inc 51 E 42 St New York 17 NY
 OMEGA-RAY—Luxor Lighting Products Inc
 OMNI-GLOW—Industrial Devices Inc
 Onan Div Studebaker-Packard Corp 2515 University
 Ave S E Minneapolis 14 Minn
 Onan (O W) & Sons Inc—see Onan Div Studebaker-
 Packard Corp
 ONE-COTE—Eagle-Picher Co
 ONE-PIECE—Buchanan Electrical Products Corp
 ONE SHOT—Hein-Werner Corp
 ONE TIME—Ware Fuse Corp
 O'Neil-Irwin Mfg Co—see Di-Acro Corp
 ONEPACK—Electric Products Co
 ONLI—Perfecite Co
 Opad Electric Co 43 Walker St New York 13 NY
 OPALITE—Lightolier Inc
 OPALUME—Litecraft Mfg Corp
 OPALUX—Lightolier Inc
 OPTIPLEX—Lightolier Inc
 OPTOMATIC—Trico Fuse Mfg Co
 Orangeburg Mfg Co 375 Park Ave New York 22 NY
 Orangeville Mfg Co Orangeville Pa
 Orenda Industrial Ltd—see Hawker Siddeley Brush Inc
 ORBLITE—Stebor Div Pyle-National Co
 ORGANO-FLUX—London Chemical Co Inc

ORGEBLOS—Spencer Turbine Co
 ORTHO—Gibson Mfg Co
 ORTHONULL—General Radio Co
 ORTHO—Line Material Industries
 Osoco Mfg Co P O Box 7268 Ft Worth Tex
 Oster Mfg Co 1340 E 289 St Wickliffe Ohio
 Outercom Electronics Corp 502 Charlottetown Mall
 Charlotte NC
 OVALITE—Kilgill Bros
 OVALITE—Line Material Industries
 OVALTUBE—Plastoid Corp
 Overbaugh & Ayres Mfg Co 411 S Clinton St Chicago
 7 Ill
 Overly-Hautz Co 11500 Madison Ave Cleveland 2
 Ohio
 Oviatt (D C) Co 2174 Lakeside Ave Cleveland 14
 Ohio
 Owatonna Tool Co 147 N Cedar St Owatonna Minn
 Owens Illinois Glass Co—see Kimble Glass Co
 Oxford Electric Corp Hudson Lamp Dix—see Hudson
 Lamp Co
 OXOFF—Anaconda Wire & Cable Co
 Oxwall Tool Co Inc 928 Broadway New York 10 NY
 OZITE—G & W Electric Specialty Co

P

PAD Inc—see Producers & Distributors Inc
 P & C Hand Forged Tool Co—see P & C Tool Co
 P & C Tool Co Box 5926 Milwaukee P O Port-
 land 22 Ore
 PD-TEL—Phelps Dodge Copper Products Corp
 PD-X—Phelps Dodge Copper Products Corp
 PIC—General Controls Co
 PIV—Link-Belt Co
 P & K—Pfaff & Kendall
 PLM Products Inc 3871 W 150 St Cleveland 11
 Ohio
 P-N—Pyle-National Co
 P & P—Potter & Brumfield Div
 PQ—Pekco Co
 PR—Plymouth Rubber Co Inc
 P & R—Potter & Rayfield Inc
 P & S—Pass & Seymour Inc
 PTC—Precision Transformer Corp
 PUC—Royal Electric Corp
 PV DUIT—Carlson Products Corp
 P-W Industries Inc 11200 Roosevelt Blvd Phila-
 delphia 15 Pa
 P & W Co—see Partrick & Wilkins Co
 PWC—Plastic Wire & Cable Corp
 PACEMAKER—Hubbell (Harvey) Inc
 PACEMAKER—Lightolier Inc
 PACEMAKER—Wakefield Lighting Div
 Pacific Electric Mfg Co—see Federal Pacific Electric
 Co
 Pacific Electric Co 747 W Redondo Beach Blvd
 Gardena Calif
 Pacific Fire Extinguisher Co San Francisco 3 Calif
 PACKAGE-AIRE—United States Air Conditioning Corp
 PACSOL—Licon Switch & Control Div
 Page Steel & Wire Div American Chain & Cable Co
 Inc P O Box 692 Monessen Pa
 PAGESMASTER—Bogen-Presto Div
 PAGESAVER—Auth Electric Co Inc
 Paine Co 5 Westgate Rd Addison Ill
 PAK-IT—American Pulley Co
 PAL—Holophane Co Inc
 Palco Mfg Co 1260 Pennsylvania Ave San Francisco
 7 Calif
 Paley Mfg Corp—see Circle Air Industries Inc
 Palmer Electric & Mfg Co 24 Water St Wakefield
 Mass
 PAN-HEAT—Jensen Inc
 PANALARM—Panellit Div ISI Inc
 PANASTAT—Panellit Div ISI Inc
 PANCAKE—Wiremold Co
 PANEL CEIL—K-B Lighting Mfg Co
 PANEL-CHANNEL—Stahlin Bros Inc
 PANEL-LUMINOUS—Luminous Ceilings Inc
 PANELAIRE—Lighting Products Inc
 Panellit Div ISI Inc 7401 N Hamlin Ave Skokie
 Ill
 Panellit Inc—see Panellit Div ISI Inc
 PANELSCOPE—Waterman Products Co Inc
 PANELUX—Lighting Products Inc
 Panelyte Div St Regis Paper Co Enterprise Ave
 Trenton NJ
 PANG—Automatic Vulcanizers Corp
 PANTRON—Control Panel Corp
 PAR-BEAM-LITE—Swiveler Co Inc
 PARA-HEAT—Essex Wire Corp
 PARA-WEDGE—Kent Lighting Corp
 PARACORE—Kaiser Aluminum & Chemical Sales Inc
 PARADOME—Holophane Co Inc
 PARAFLO—Day-Brite Lighting Inc
 Paragon Electric Co Inc 1600 12th St Two Rivers
 Wis
 Paragon Electrical Mfg Co—see National Electro Dy-
 namics Corp
 PARAGRID-TILE—Wilson (J A) Lighting
 PARAGROOVE—Line Material Industries
 PARAHEX—Sinko Mfg & Tool Co
 PARALOUVER—Day-Brite Lighting Inc
 PARAMOUNT—Earl Electric Mfg Corp
 Paramount Industries Inc G-1080 Ballanger Rd
 Flint 4 Mich
 PARANITE—Essex Wire Corp
 Parco Mfg Co—see Rogers Electric Laboratories
 Park Metalware Co Inc—see Xcelite Inc
 Park Nameplate Co Inc 34-10 Linden Place Flushing
 NY

PARK SQUARE—Litecraft Mfg Corp
 Parker Electrical Mfg Co 221 Washington St Oak-
 land 7 Calif
 PARKMASTER—Steber Div
 PARMATIC—General Electric Co
 PARQUAY—Brown Co
 Parr Mfg Corp 44 Austin St Newark 2 NJ
 Partlow Corp 230 Campton Rd New Hartford NY
 Partrick Carter & Wilkins Co—see Partrick & Wilkins
 Co
 Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa
 Pass & Seymour Inc Syracuse 9 NY
 PASSMOUR—Pass & Seymour Inc
 PATENT-FLEX—Wil-Son Mfg Co
 Patent Scaffolding Co Inc 38-21 12th St Long Island
 City 1 NY
 PATH FINDER—Cannon Electric Co
 PATH OF LIGHT—Touch-Plate Mfg Corp
 PATTERN-LITE—Keystone Electric Mfg Co
 Pauluhn Electric Mfg Co Inc 422 Broome St New
 York 13 NY
 PEAK DRILL—Star Expansion
 PECO—Product Electric Corp
 Pedrick Tool & Machine Co 3640 N Lawrence St
 Phila 40 Pa
 PEDRIMATIC—Pedrick Tool & Machine Co
 PEE-WEE—Mueller Electric Co
 PEER-ACE-PEER—Peer Inc
 Peer Inc 1220 Milton St Benton Harbor Mich
 PEERLESS—General Cable Corp
 Peerless Electric Co—see Peerless Electric Div H K
 Porter Co Inc
 Peerless Electric Div H K Porter Co Inc 1401 W
 Market St Warren Ohio
 Peerless Mfg Co—see Valley Fan Mfg Co
 PEERLITE—Guth (Edwin F) Co
 PEGI—Adalet Mfg Co
 Pekco Co 1227 McDonald Ave Brooklyn 30 NY
 PELICAN—Pitman Mfg Co
 PEMCO—Parker Electrical Mfg Co
 PEMCO—Philadelphia Electrical & Mfg Co
 PEN-FLAY—Ultra-Violet Products Inc
 PENCIL OF LIGHT—Electronic Control Corp
 Penco Div Alan Wood Steel Co 200 Brower Ave
 Oaks Pa
 PENDLUM—Versen (Kurt) Co
 PENDOME—Versen (Kurt) Co
 Penetone Co 74 Hudson Ave Tenafly NJ
 Penetray Corp 615 Front St Toledo 5 Ohio
 PENETROX—Burdury Corp
 PENN—Solar Electric Corp
 Penn Controls Inc Goshen Ind
 PENN-CRIMPS—Penn-Union Electric Corp
 Penn Electric Switch Co—see Penn Controls Inc
 Penn Fibre & Specialty Co Inc 2024 F Westmoreland
 St Phila 34 Pa
 Penn (Wm) Fluorescent Light Mfg Co 426 E Alle-
 gheny Ave Philadelphia 34 Pa
 PENN LITE—Penn (Wm) Fluorescent Light Mfg Co
 PENN-ONS—Penn-Union Electric Corp
 PENN-SLEEVES—Penn-Union Electric Corp
 PENN-STEMS—Penn-Union Electric Corp
 PENN-TAPS—Penn-Union Electric Corp
 Penn-Union Electric Corp 315 State St Erie Pa
 PENN-WRAPPER—Penn-Union Electric Corp
 PENNDRIILL—Pennsylvania Drilling Co
 PENNLUGS—Penn-Union Electric Corp
 PENNSBURG—Penn (Wm) Fluorescent Light Mfg Co
 Pennsylvania Drilling Co Masonry Drill Div 1215
 Chartiers Ave Pittsburgh 20 Pa
 Pennsylvania Transformer Co—see Pennsylvania Trans-
 former Div
 Pennsylvania Transformer Div McGraw-Edison Co
 Box 330 Canonsburg Pa
 PENOLENE—Penetone Co
 PENOTE—Cleveland Trencher Co
 PENROSE—Northbrook Products Inc
 PERECO—Pereny Equipment Co Inc
 Pereny Equipment Co Inc Tri-Village Sta Columbus
 12 Ohio
 Pereny Pottery & Equipment Co—see Pereny Equip-
 ment Co Inc
 PERFALUX—Lightolier Inc
 Perfectite Co 1457 E 40 St Cleveland 3 Ohio
 Perfect-Line Mfg Corp Old Country Rd & Railroad
 Ave P O Box 65 Hicksville LI NY
 PERFECTAIRE—Perfect-Line Mfg Corp
 Perfection Div Hupp Corp 1135 Ivanhoe Rd Cleve-
 land 10 Ohio
 Perfection Industries—see Perfection Div
 Perflex Controls—see General Controls Co
 Perkins Battery Co 214 Golden Lane New Oxford
 Pa
 PERMA-CODE—Brady (W H) Co
 PERMA-DURE—Phelps Dodge Copper Products Corp
 Perma-Line Corp P O Box 525 Middleboro Ky
 PERMA-LITE—Modern Light Co Inc
 Permacel U S Highway 1 New Brunswick NJ
 Permacel-Lepage's Inc—see Permacel
 PERMACOTE—Westinghouse Electric Corp Lamp Div
 PERMAFLECTOR—Pittsburgh Reflector Co
 PERMAFOAM—Columbia Wire & Supply Co
 PERMALINE—Columbia Wire & Supply Co
 PERMALINE—Line Material Industries
 Permanent Magnet Co Inc 4437 Bragdon St Lawrence
 26 Ind
 PERMAPRENE—Hatfield Wire & Cable Div Con-
 tinental Copper & Steel Industries Inc
 PERMASEAL—Guardian Mfg Co
 PERMI-CAL—Topflight Corp
 PERMODIP—Wilbur & Williams Co Inc
 Peschel Electronics Inc RFD #1 Patterson NY
 Petelco Inc 2700 Roosevelt Rd Broadview Ill
 Peters Mfg Co 162 Old Colony Ave Wollaston 70
 Mass
 Peterson (A H)—see Aetna Protection Co
 PETRO-DURE—Phelps Dodge Copper Products Corp

Petter Diesel Engine Div—see Hawker Siddeley Brush
 Inc
 Pfaff & Kendall 84 Foundry St Newark 5 NJ
 Phalo Plastics Corp 530 Boston Turnpike Shrewsbury
 Mass
 PHALON—Phalo Plastics Corp
 PHANO-CHARGER—General Electric Co
 PHAROS—Perfelite Co
 PHASE-ISOLATED—Pennsylvania Transformer Div
 PHASE-GUARD—Stradley Engineering Co
 PHASEFORMER—Eastern Specialty Co
 PHAZGARD—Chronoflash Co
 Phelps Dodge Copper Products Corp 300 Park Ave
 New York 22 NY
 Phelps Fan Mfg 715 Thomas St Little Rock Ark
 Phelps Mfg Co—see Phelps Fan Mfg Co
 PHIL-TROL—Phillips Control Co
 Philadelphia Electrical & Mfg Co 1200-36 N 31 St
 Phila 21 Pa
 Philadelphia Insulated Wire Co 333 New Albany Rd
 Morristown NJ
 PHILITE—Ruby-Philite Corp
 Phillips (Oscar) Co 9701 Reading Rd (Box 21)
 Cincinnati 15 Ohio
 Phillips Control Co 59 W Washington St Joliet Ill
 Phillips Drill Co U S 12 Michigan City Ind
 Phillips Mfg Co Inc 8200 Grand Ave Minneapolis 20
 Minn
 PHOENIX—Commercialaire Corp of America
 PHOENIX—Frigid Air
 PHONETALARM—American District Telegraph Co
 PHONOCALL—Faraday Inc
 PHOSON—United Wire & Supply Corp
 PHOSTUBE—All-State Welding Alloys Co Inc
 PHOTO-TROLLER—Westinghouse Electric Corp
 Photobell Co Inc 12 E 22 St New York 10 NY
 Photomation Inc 280 Polaris Ave Mountain View
 Calif
 PHOTOMETRIC—Wakefield Lighting Div
 PHOTOSWITCH—Electronics Corp of America
 PIC—General Controls Co
 PICK-OFF—Topflight Corp
 PICOMA—Pipe Coupling Mfrs Inc
 Pieper-Lillard Div Jasper Blackburn Corp 1525 Wood-
 son Rd St Louis 14 Mo
 PIER—Peer Inc
 Pierce Products Inc Box F Leicester NY
 Pierce Renewable Fuses Inc—see Pierce Products Inc
 PIERCEWAY—Massey (A H) Inc
 PILOTSTAT—Minneapolis-Honeywell Regulator Co
 PIN-GRIP—Star Expansion
 PINCOR—Pioneer Gen-E-Motor Co
 Pines Engineering Co Inc 601 Walnut St Aurora Ill
 PINK-RITE—Wiss (J) & Sons Co
 PINSPOUT—Versen (Kurt) Co
 Pioneer Gen-E-Motor Co 5841 W Dickens Ave Chicago
 39 Ill
 Pipe Coupling Mfrs Inc P O Box 488 Martins Ferry
 Ohio
 PIPEMASTER—Erie Tool Works
 Piqua Machine & Mfg Co 441 S College St Piqua
 Ohio
 PIRAC—Electric-Cord Mfg Co Inc
 PISTOL-GRIP—Anderson Electric Corp
 Pitman Mfg Co Garner Ave & Duck Rd Grandview Mo
 PITT LINE—Thetpitt Mfg Co
 Pittsburgh Reflector Co Oliver Bldg Mellon Square
 Pittsburgh 22 Pa
 Pittsburgh Standard Conduit Co James St Verona Pa
 PLANPAK—Automatic Control Co
 PLANT-CENTRAL—Welttronc Co
 PLANTE—Gould-National Batteries Inc
 PLANTMAN FLOORMOBILE—Handling Devices Co Inc
 PLAQOHM—Ward Leonard Electric Co
 PLASGEN—Chester Cable Corp
 PLASTE-O-PRENE—Snyder (M L) & Son Inc
 Plaster-Eye Co 2560 Noblesstown Rd Pittsburgh 5 Pa
 PLASTEX—Simplex Wire & Cable Co
 Plastex Protective Products Inc 156 Getty Ave Clif-
 ton NJ
 PLASTI-FLEX—Auburn Mfg Co
 PLASTI-LUVR—Luminous Ceilings Inc
 PLASTIBOND—Pittsburgh Standard Conduit Co
 PLASTIC METAL—Onan (A L) Co Inc
 Plastic Wire & Cable Corp E Main St Jewett City
 Conn
 PLASTICLINER—Duro-Test Corp
 PLASTICORD—Chester Cable Corp
 PLASTICORE—Chester Cable Corp
 PLASTICOTE—Chester Cable Corp
 PLASTILET—Sloane Mfg Co
 PLASTILIFE—David's Gloves Inc
 Plastiline Inc 1251 N E 48 St (P O Box 2023)
 Pompano Beach Fla
 PLASTILITE—Metalcraft Products Co Inc
 PLASTITE—Whitney Blake Co
 Plastoid Corp 42-61 24th St LIC 1 NY
 PLASTOLIER—Metalcraft Products Co Inc
 PLASTONE—Co-operative Utilities Co Inc
 PLEXI-TONE—Penn (Wm) Fluorescent Light Mfg Co
 PLEXILUX—Sun-Lite Mfg Co
 PLEXILITER—Duro-Test Corp
 PLEXILITE—Gruber Bros Inc
 PLEXOLINE—Gruber Bros Inc
 PLEXOLINE—Day-Brite Lighting Inc
 PLI-A-BAND—Memco Engineering & Mfg Co Inc
 Plomo Tool Co—see Proto Tool Co
 PLUG-A-LITE—Swiveler Co Inc
 PLUG-IN—National Electric Div H K Porter Co
 PLUG-IN—Square D Co
 PLUG-N-CAPS—Jordan Industries Inc
 PLUG-PAK—Gemco Electric Co
 PLUGMASTER—Sperli Faraday Inc
 PLUGMOLD—Wiremold Co
 Plummer (Walter A) Co—see Zippertubing Co
 PLUS PANEL—General Switch Co
 Plymouth Rubber Co Inc 23 Revere St Canton Mass
 PLYMOZONE—Plymouth Rubber Co Inc

PLYMPRENE—Plymouth Rubber Co Inc
PNEULATOR—Mine Safety Appliances Co
PNEU-DRAULIC—Allis-Chalmers Mfg Co
POCKETPOT—Sensitive Research Instrument Corp
POCKET-SIZE—Champion DeArment Tool Co
POCKETSCOPE—Waterman Products Co Inc
POLE-MASTER—Klein (Mathias) & Sons
POLE STAR—Pennsylvania Transformer Div
POLECAT—Pitman Mfg Co
Poles Inc E 706 Sprague Ave Spokane 3 Wash
POLICARB—Driver (Wilbur B) Co
Polis Mfg Co—see Nelson Distributor Products Div
Pollak (Joseph) Corp 81-95 Freepoint St Boston 22 Mass
Pollak Luminescent Corp 1105 W Lawrence Ave Chicago 40 Ill
POLLEN-EX—Associated Mills
POLY-PLATE—Brady (W H) Co
POLY-THERMALEZE—Pheips Dodge Copper Products Corp
POLY-V—Raybestos-Manhattan Inc
POLYCLAD—Carbolite Co
POLYDYNE—General Electric Co Apparatus Sales Div
POLYFLEX—Walker Brothers
Polyken Sales Div Kendall Co 309 W Jackson Blvd Chicago 6 Ill
Polymer Corp 2120 Fairmount Ave Reading Pa
Polymer Corp of Pa—see Polymer Corp
POLYPENCO—Polymer Corp
POLYRANGER—Sensitive Research Instrument Corp
Poolquip Inc 5620 New Peachtree Rd Chamblee Ga
Porcelain Products Co 224 N Patterson St Carey Ohio
Porcelain Products Inc—see Chance (A B) Co
PORT-A-PHONE—Feiler Engineering & Mfg Co
PORT-O-LARM—Kiddie Ultrasonic & Detection Alarms Div
PORT-O-REEL—Industrial Electric Reels Inc
PORT-O-VENT—Reed Unit-Fans Inc
PORTA-BAND—Porter-Cable Machine Co
PORTA-CART—General Electric Co Major Appliance Div
PORTA DRIVE—Muncie Gear Works Inc
PORTA-FLEX—Gardner Products Co
PORTA-HOIST—Fairfield Industries Inc
PORTA-KALL—Loge Electronics Inc
PORTA-PULLER—Fairfield Industries Inc
PORTA PULLER—Hykon Mfg Co
PORTA-SIGNAL—Dryomatic Co
PORTA-STUDIO—Blonder-Tongue Laboratories Inc
Portable Light Co Inc 65 Passaic Ave Kearny NJ
PORTAIR—Coppus Engineering Corp
PORTALITE—Carpenter Mfg Co
Portaltite Co—see Carpenter Mfg Co
Porter-Cable Machine Co 700 Marcellus St Syracuse 4 NY
Portland-Monson Slate Co 465 Congress St Portland 3 Me
PORTO—Hessel (W F) Co Inc
PORTO-MITE—Beaver Pipe Tools Inc
PORTO SYSTEM—Hessel (W F) Co Inc
Portomas Inc 1521 E Nine Mile Detroit 20 Mich
POS-E-FLEX—Thomas & Betts Co
POS-E-KON—Thomas & Betts Co
POSITECT—S & C Electric Co
POSITIVE SEAL—Allis-Chalmers Mfg Co
POSITROL—S & C Electric Co
Post Electronic Products 12 Lothrop St Beverly Mass
POST-LITE—Great Northern Mfg Corp
Post-O-Lite Inc Route 138 Canton Mass
POSTLITE—Drake Mfg Co
POSTOP—Holophone Co Inc
POTLOK—General Controls Co
Potter & Brumfield Div American Machine and Foundry Co Princeton Ind
Potter & Brumfield Inc—see Potter & Brumfield Div
Potter & Rayfield Inc P O Box 1042 Atlanta Ga
POW-R—Vermeer Mfg Co
POW-R-DRIVE—Wachs (EH) Co
POW-R-MATIC—Aero-Motive Mfg Co
POW-R-SET—Ramset Fastening System
POW-R-SPADE—Stamings Inc
POWACALL—Edwards Co Inc
Power Power Tool Co—see Omark Industries Inc
POWDERON—Bound Brook Bearing Corp of America
POWER-CAPSULE—Bogue Electric Mfg Co
POWER CHARGER—Fox Products Co
POWER CHIEF—Nordberg Mfg Co
POWER-GUIDE—Paramount Industries Inc
POWER KING—Goodall Rubber Co
Power Line Fan Co Plainfield NJ
POWER-LUME—Wheeler Reflector Co
POWER-O-MATIC 60—Blue M Electric Co
POWER QUARTZ—Anthony Lighting Corp
POWER STREAK—American Electric Cable Co
Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio
POWER-TRAN—Mid-States Welder Mfg Co
POWER-TWIST—Duro-Test Corp
POWER VENT—Progress Mfg Co Inc
POWERBEL—Auth Electric Co Inc
POWERCON—Cornell-Dubilier Electronics
Powercraft Corp 2215 De Kalb St St Louis 4 Mo
POWERDUCT—Anaconda Wire & Cable Co
Powerdyne Inc 17150 Boones Ferry Rd Oswego Ore
POWEREEL—Industrial Electric Reels Inc
POWERLOID—Guardian Electric Mfg Co
POWERLUME—Solar Light Mfg Co
POWERMASTER—Lewis-Shepard Products Inc
POWERMASTER—Oxwall Tool Co Ltd
POWERMATE—K F Industries Inc
POWERPILE—Minneapolis-Honeywell Regulator Co
POWERPLUG IN—Adam (Frank) Electric Co
POWERS-AMERICAN—McCabe-Powers Body Co
POWERSHOP—DeWalt Inc
POWERSTAT—Superior Electric Co
POWERUPTEK—Delta-Star Electric Div H K Porter Co Inc

POWR-CORD—Royal Electric Corp
POWR-PAK—Winpower Mfg Co
POWR PAKT—Alliance Mfg Co Inc
POWR-RIB—Ohmite Mfg Co
POWR-VAN—Vanguard Mfg Co
POWR-WHEEL—Vanguard Mfg Co
Powrex Switch Co 36 Pleasant St Watertown Mass
POXALLOY—Okun (A L) Co Inc
PRACTI-CALL—Standard Electric Time Co
PRAYER LIGHT—Aerolux Light Corp
PRE-MARX—Premax Products Div Chisholm-Ryder Co Inc
PRECIPITRON—Westinghouse Electric Corp Sturtevant Div
PRECISION-CHARGE—Lincoln Electric Co
Precision Machine Products 768 Atlantic Ave Alameda Calif
Precision Multiple Controls Inc 1250 E Ridgewood Ave Ridgewood NJ
Precision Parts Corp 400 N First St Nashville 7 Tenn
Precision Products Inc—see Precision Products & Controls Inc
Precision Products & Controls Inc 6116 E 15th St Tulsa 12 Okla
Precision Thermometer & Instrument Co 1434 Brandywine St Philadelphia 30 Pa
Precision Transformer Corp 2483 Greenleaf Ave Elk Grove Village Ill
Precision Welder Mfg Co 2483 Greenleaf Ave Elk Grove Village Ill
PREENX—General Electric Co
Preformed Line Products Co 5349 St Clair Ave Cleveland 3 Ohio
Premax Products Div Chisholm-Ryder Co Inc College & Highland Aves Niagara Falls NY
Prepro Corp Edgerton Wis
PRES-SURE—Buchanan Electrical Products Corp
PRES-TO-HEAT—Triton Mfg Co Inc
Prescolite Mfg Corp 2229 Fourth St Berkeley 10 Calif
PRESIDENTIAL—Pittsburgh Reflector Co
PRESLOK—Prescolite Mfg Corp
PRESS LITES—Sun-Lite Mfg Co
PRESS-TAKER—Cramer Div
PRESSURE-LOCK—General Electric Co
Pressure Products Corp—see Prepro Corp
PRESSURE-TITE—Metropolitan Electric Mfg Co
PRESSURETROL—Minneapolis-Honeywell Regulator Co
PRESSWITCH—Hubbell (Harvey) Inc
PRESTEST—Cutler-Hammer Inc
PRESTIGE—Project Fixture Mfg Corp
PRESTO—Bogen-Presto Div
Presto Recording Corp—see Bogen-Presto Div
PRIBRO—Price Bros Inc
Price Bros Inc 4301 W Madison St Chicago 24 Ill
Price Electric Corp East Church & Second Sts Frederick Md
PRIDEL—Price Bros Inc
PRIDEX—Price Bros Inc
PRIMAX—Roche (Paul C) Co Inc
PRINCE—Yokogawa Electric Works Inc
PRINCE LITE—Rab Electric Mfg Co Inc
PRINCESS—Curtis Lighting Div
Principle Research & Development Corp 200 Citizens Bldg Aberdeen SD
PRINCO—Precision Thermometer & Instrument Co
Pringle Electrical Mfg Co 1900-1912 N Sixth St Philadelphia 22 Pa
PRISMATIC—Keystone Electric Mfg Co
PRISMALUME—Holophone Co Inc
PRISMALUX—Lightolier Inc
PRISMATIC—Wakefield Lighting Div
PRISMOTID—Guth (Edwin F) Co
PROBOTROL—Automatic Control Co
PRODUCERLITE—Solar Light Mfg Co
Producers and Distributors Inc 1321 Hanover Ave Allentown Pa
PRODUCTIMETER—Durant Mfg Co
Production Planning Co—see Allen Cooler & Ventilator Inc
Producto Electric Corp 932 Rogers Pl New York 59 NY
PROFILE—Lightolier Inc
PROGRAMONITOR—Precision Products & Controls Inc
Progress Mfg Co Inc Castor Ave & Tulip St Phila 34 Pa
Project Fixture Mfg Corp 10 Ranick Dr S Amityville NY
PROJECTORAMA—Century Lighting Inc
PRO-MATIC—General Control Co
PROPELLAIR—Robbins & Myers Inc
PROTECHTORS—Zippertubing Co
PROTECT-O-VANE—Minneapolis-Honeywell Regulator Co Industrial Div
PROTECTO-MASK—Mystik Adhesive Products Inc
PROTECTOGLLO—Minneapolis-Honeywell Regulator Co
PROTECTORELAY—Minneapolis-Honeywell Regulator Co
PROTECTROL—Automatic Control Co
PROTEX—Woodhead (Daniel) Co
PROTEXTUB—Eagle Electric Mfg Co Inc
Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif
PRY-LITE—Emerson-Pryne Co
Pucel Enterprises Inc 3746 Kelley Ave Cleveland 14 Ohio
PUL-LIFT—Yale & Towne Mfg Co
PULFLEX—Universal Metal Hose Co
PULFUZSWITCH—Adam (Frank) Electric Co
PULL-A-WAY—Wright Hoist Div
PULL-REEL—Naragansett Wire Co
Pulman Vacuum Cleaner Corp 25 Buick St Boston 15 Mass
PULSESCOPE—Waterman Products Co Inc
PULSEOHM—Ward Leonard Electric Co
PULSOLITE—Electronic Control Corp
PUMPTROL—Square D Co

PUNCHY—Curtis Lighting Div Curtis-All Brite Lighting Inc
PURE—Waveland Electric Co
PURE AIRE—Associated Mills
Pure Carbon Co Inc 441 Hall Ave St Marys Pa
PUREBON—Pure Carbon Co Inc
PUREMET—Pure Carbon Co Inc
PURPLE PEEPER—Minneapolis-Honeywell Regulator Co
PUSHBUTTON—White-Rodgers Co
PUSHMATIC—I-T-E Circuit Breaker Co BullDog Electric Products Div
Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill
PYLE-O-FLEX—Pyle-National Co
PYLE-STAR-LINE—Pyle-National Co
PYLETS—Pyle-National Co
PYLON-LITE—Revere Electric Mfg Co
PYR-O-VANE—Minneapolis-Honeywell Regular Co Industrial Div
PYRALITE—Gruber Bros Inc
Pyramid Electric Co 1445 Hudson Blvd North Bergen NJ
Pyramid Instrument Corp—see Amprobe Instrument Corp
PYRANOL—General Electric Co
PYRATHERM—Mercoir Corp
PYREX—Corning Glass Works
PYRO—Pyrometer Instrument Co
PYROLARM—Solar Sonic Devices Inc
PYROLUX—Luxor Lighting Products Inc
PYROSTAT—Minneapolis-Honeywell Regulator Co
PYROTEMP—Electronic Control Corp
PYROCAST—Pyrosil Inc
PYROCON—Illinois Testing Laboratories Inc
PYRODUR—Electra Insulation Corp
PYROLITE—Berko Electric Mfg Corp
Pyrometer Instrument Co Bergenfield NJ
Pyrosil Inc 1889 Front St Cuyahoga Falls Ohio

Q

Q-BESTON—Auburn Mfg Co
QHT—General Electric Co
QIKTAP—Burndy Corp
QQ—Square D Co
QIKLUG—Burndy Corp
QUAD—Quadrangle Mfg Co
QUAD-OVAL—Revere Electric Mfg Co
QUADLITE—Mole-Richardson Co
QUADRA BOOSTER—Blonder-Tongue Laboratories Inc
Quadrangle Mfg Co 32 S Peoria St Chicago 7 Ill
QUADRILITE—Lightolier Inc
QUAKER—Lukens (Thos F) Metal Co
QUAKER—Snyder (M L) & Son Inc
Quaker City Electric Mfg Co 2810 E Pacific St Phila 34 Pa
QUAKER LITE—Quaker City Electric Mfg Co
QUARTZ-GLOW—Utah Electronics Corp
QUARTZ OVAL—Revere Electric Mfg Co
Quartz Products Corp 688 Somerset St (P O Box 628) Plainfield NJ
QUARTZLITE—Stebber Div
Queen Gray Co—see Gray Instrument Co
Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky
QUELARC—Pyle-National Co
QUICK-BILT—Frick-Gallagher Mfg Co
Quick Charge Div Little Giant Corp 3810 N Tulsa St Oklahoma City Okla
Quick Charge Inc—see Quick Charge Div Little Giant Corp
QUICK-CLEAN—Allis-Chalmers Mfg Co
QUICK-DRIVE—Omark Industries Inc
QUICK-LITE—New York Fluorescent Mfg Co Inc
QUICK-TROL—Nelson Electric Mfg Co
QUICK-WEDGE—Kedman Co
QUICKSTART—Marvel Lamp Co
QUICKWIRE—Cable Electric Products Inc
QUICKWIRE—Leviton Mfg Co Inc
QUIET—Sierra Electric Corp
QUIET AC—Leviton Mfg Co Inc
QUIET-CEL—Neo-Ray Products Inc
QUIET-LIGHT—Metalcraft Products Co Inc
Quincy Co Inc 415 Madison Ave New York 17 NY
Quijada Tool Co Inc—see Collins Machinery Corp
Quijada Tool Div—see Collins Machinery Corp
QUIK-HEAT—Clements Mfg Co
QUIK-LABEL—Brady (W H) Co
QUIK-LIFT—Coffing Hoist Div Duff-Norton Co
QUIK-LOC—Joy Mfg Co
QUIK-LOK—Eagle Electric Mfg Co Inc
QUIK-PLATE—Brady (W H) Co
QUIK-VAC—Clements Mfg Co
QUIKHETER—Adam (Frank) Electric Co
QUIKIT—Wells Mfg Corp
QUIKSITE—H-B Instrument Co
Quincy Elevator Gate Co—see Quincy Mfg Co
Quincy Mfg Co Box 916 Tiffin Ohio
QUINORGO—Johns-Manville
QUINTERRA—Johns-Manville
QUINTERRABORD—Johns-Manville
QUINTROL—Precision Products & Controls Inc
QWIK-CHANGE—Square D Co
QWIK-OPEN—Square D Co

R

R-ASE—All-Steel Equipment Inc
R-B-M Controls Div Essex Wire Corp 131 Godfrey St Logansport Ind
RCA—Radio Corp of America

RCA WHIRLPOOL—Whirlpool Corp
 RCD—Rotary Concrete Drill Co
 RE—Reuland Electric Co
 R & IE Equipment Div—see I-T-E Circuit Breaker Co
 R-K—Ruggles-Klingemann Mfg Co
 R/M—Raybestos-Manhattan Inc
 R & M—Robbins & Myers Inc
 R & M Hunter—see Hunter Div
 RS—River Smelting & Refining Co
 R/S—Refrigerating Specialties Co
 RSPV—Link-Belt Co
 R T & E Co—see R T & E Corp
 R T & E Corp 1900 East North St Waukesha Wis
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY
 RAB-O-LET—Rab Electric Mfg Co Inc
 RABOLITE—Rab Electric Mfg Co Inc
 Racine Electric Products—see Howard Industries Inc
 RACO—All-Steel Equipment Inc
 RACO—Railroad Accessories Corp
 RAD-O-GLOW—Blue M Electric Co
 Radcor Inc P O Box 432 Postoria Ohio
 RADCOR—Wiegand (Edwin L) Co
 RADECTOR—Jordan Electronics
 RADELIN—United States Radium Corp
 RADI-AIRE—Reynolds Electric Co
 Radiant Lamp Corp 300 Jeff Ave Newark NJ
 RADIANTGLASS—Allied Precision Industries
 RADIATAT—Ward Leonard Electric Co
 Radio Corp of America Front & Cooper Sts Camden 2 NJ
 Radio Frequency Laboratories Inc Boonton NJ
 Radio Receptor Co Inc—see General Instrument Receiver Div
 RADIOCARB—Driver (Wilbur B) Co
 Radiocentric Transformer Co 411 S Sangamon St Chicago 7 Ill
 RADIX—Versen (Kurt) Co
 Radix Wire Co 26260 Lakeland Blvd Cleveland 32 Ohio
 RADOR—Atlas Overhead Door Co
 Rae Motor Corp Box 518 McHenry Ill
 RAIL RUNNER—A E Industrial Div
 Railroad Accessories Corp Tenakill Park Cresskill NJ
 RAKIT—Cope (T J) Div Rome Cable Corp
 RAKSCOPE—Waterman Products Co Inc
 Raico Mfg Co 123-141 N Albany Ave Chicago 12 Ill
 RAM—Diamond Expansion Bolt Co Inc
 RAMAC—Rattan Mfg Co
 Rambusch Decorating Co 40 W 13 St New York 11 NY
 Ramco Mfg Co 540 Westfield Ave W Roselle Park NJ
 Ramco Mfg & Engineering 5413 N E Columbia Blvd Portland Ore
 Ramset Div—see Ramset Fastening System
 Ramset Fastening System Winchester-Western Div Olin Mathieson Chemical Corp 289 Winchester Ave Olin Haven 4 Conn
 Ramset Fasteners Inc—see Ramset Fastening System
 RANCH-AIRE—Cool-ette Inc
 RANCH-VENT—Cool-ette Inc
 RANCHO—Western Insulated Wire Co
 RANDAC—Mitchell Rand Mfg Corp
 Randall Graphite Bearings Inc Greenlawn & Lake Sts Lima Ohio
 RANGE LUGS—Frankel Connector Co
 RANGER—Day-Brite Lighting Inc
 RANGESPLICES—Frankel Connector Co
 RANGESTUD—Frankel Connector Co
 RANGETAP—Frankel Connector Co
 RAPAC—Square D Co
 RAPID—Schoenberg (August) Inc
 Rapid Electric Co Inc 2881 Middletown Rd Bronx 61 NY
 Rapid Electroplating Process Inc 1414 S Wabash Ave Chicago 5 Ill
 RATOLARM—Fischer & Porter Co
 RATTAN—Benjamin Electric Mfg Co
 Rattan Mfg Co 10 Wall St (P O Box 1745) New Haven 7 Conn
 Rattray (George) & Co Inc 101 New South Rd Hicksville NY
 Rauland-Borg Corp 3535 West Addison St Chicago 18 Ill
 RAWL—Rawplug Co Inc
 RAWL-DRIVE—Rawplug Co Inc
 RAWLDRILL—Rawplug Co Inc
 Rawplug Co Inc 212 Petersville Rd New Rochelle NY
 RAY-HEAT—Tennessee Plastics Inc
 RAY-LINE—Portable Light Co Inc
 RAY-LINE—Sireno Signal Mfg Corp
 RAY MAN—Raybestos-Manhattan Inc
 RAY-O-CELL—Com-Pak-Elt Mfg Corp
 Ray-O-Vac Co 212 E Washington Ave Madison 10 Wis
 RAY-VEC—Electrend Products Corp
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ
 Rayboard Co 2nd and Jefferson Sts (P O Box 507) Martins Ferry Ohio
 Raydine Corp 2715 S Fourth St (P O Box 1147) Springfield Ill
 RAYESCENT—Westinghouse Electric Corp Lamp Div
 RAYONET—Southern New England Ultraviolet Co
 Raytheon Co Commercial Apparatus & Systems Div 100 River St Waltham 54 Mass
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn
 Raytheon Co Microwave & Power Tube Div Foundry Ave Waltham 54 Mass
 RAYTRON—Rattray (George) & Co Inc
 RAYWALL—Tennessee Plastics Inc
 RE-CIRK-IT—Heinemann Electric Co
 RE LUX—Versen (Kurt) Co
 REACTIFORMER—Superior Switchboard & Devices Div
 REACTODYNE—U S Electrical Motors Inc

REACTROL—General Electric Co
 Reading Body Works Inc 240 Gregg Ave Reading Pa
 Reading Chain & Block Corp—see Reading Crane & Hoist Corp
 Reading Crane & Hoist Corp 2100 Adams St Reading Pa
 READY HEAT—Cox and Co Inc
 Ready-Power Co 11231 Freud Ave Detroit 14 Mich
 REALITE—Holophane Co Inc
 REAM-RITE—Holub Industries Inc
 REBALL—Versen (Kurt) Co
 RECAL—Versen (Kurt) Co
 RECIPROMOTORS—Trombetta Solenoid Corp
 RECO—Reynolds Electric Co
 Recora Co Inc Powis Rd (Box 68) St Charles Ill
 RECTICARGER—Raytheon Co
 RECTIFIER—Raytheon Co
 RECTIRINGER—Raytheon Co
 RECTODYNE—Christie Electric Corp
 RECTOPOWER—Mallory (P R) & Co Inc
 RECTOX—Westinghouse Electric Corp
 RED ARROW—Lift Trucks Inc
 RED BAND—Howell Electric Motors Co
 RED CENTER—Klein (Mathias) & Sons
 Red 'D'—Diamond Wire & Cable Co
 RED-D-HEAT—Diamond Wire & Cable Corp
 RED-D-PRENE—Diamond Wire & Cable Co
 RED DOT—Mason (L E) Co
 RED END—Simonds Saw and Steel Co
 RED GIANT—Revolver Co
 RED H LINE—Hindle Transformer Co Inc
 RED HEAD—Phillips Drill Co
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio
 RED SPOT—Wakefield Lighting Div
 RED TANG—Simonds Saw and Steel Co
 RED TOP—Bradley Semiconductor Corp
 RED TOP—H B Instrument Co
 RED-TOP—Helwig Carbon Products Inc
 REDDY-TILT—Thomas & Betts Co
 Redi-Bolt Inc 5334 Indianapolis Blvd East Chicago Ind
 REDI-HEAT—Knapp-Monarch Co
 REDI-KORNS—Stahl Bros Inc
 REDI-TEES—Stahl Bros Inc
 REDLUX—Luxor Lighting Products Inc
 REDMOND—Cyclo-Freeze Corp
 Redmond Co Inc 201 Monroe St Owosso Mich
 REDOME—Versen (Kurt) Co
 REDTOP—Bradley Semiconductor Corp
 Reed Unit-Fans Inc 501 N St Patrick St New Orleans La
 REEL-O-MATIC—Columbia Products Inc
 REELTIP—Hykon Mfg Co
 REELITE—Appleton Electric Co
 Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich
 Rees (Mackworth G) Inc—see Rees (Mackworth G) Div
 Reeve Electrical Co Inc 120 W 42nd St New York 36 NY
 Reeve Electronics Inc 609 W Lake St Chicago 6 Ill
 REVELEC—Reeve Electronics Inc
 Reeves Pulley Co—see Reeves Pulley Div Reliance Electric & Engineering Co
 Reeves Pulley Div Reliance Electric & Engineering Co 1225 7th St Columbus Ind
 REFLEX—Versen (Kurt) Co
 REFRACTOLENS—Holophane Co Inc
 Refrigerating Specialties Co 3004 W Lexington St Chicago 12 Ill
 REGAL-LITE—Sternier Industries
 Regal-Lite Corp 19 Grosvenor Ave East Providence 14 RI
 REGATRON—Electronic Measurements Co Inc
 REGENT—Keystone Electric Mfg Co
 Regent Controls Inc 101 Harvard Ave Stamford Conn
 REGOHM—Electric Regulator Corp
 REGULA—Curtis Lighting Div Curtis-All Brite
 REGULEX—Allis-Chalmers Mfg Co
 REGULITE—Ward Leonard Electric Co
 REGUTRON—Electric Machinery Mfg Co
 REICHEL—Pacific Fire Extinguisher Co
 Reichert Float and Mfg Co 2242 Smead Ave Toledo 6 Ohio
 REIGNSEAL—Peters Mfg Co
 REIGNSKIN—Peters Mfg Co
 REJUST—Versen (Kurt) Co
 RELAMPALITE—Prescollite Mfg Corp
 RELAY-AMP—Goldak Co Inc
 RELECTO—Appleton Electric Co
 RELENS—Versen (Kurt) Co
 RELIABLE—Standard Electric Co Inc
 Reliable Battery Co—see Standard Electric Co Inc
 RELIANCE—American Steel & Wire Div
 RELIANCE—Trine Mfg Corp
 Reliance Automatic Lighting Co—see Reliance Time Controls Inc
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio
 Reliance Time Controls Inc 1927 Mead St Racine Wis
 RELOID—Guardian Electric Mfg Co
 Relton Corp 99 N Lotus Ave (P O Box 5546) Pasadena Calif
 Rembrandt Lamp Corp 4500 W Division St Chicago 51 Ill
 REMCON—Amprobe Instrument Corp
 REMCRAFT—Robbey Electric Mfg Co
 Remington Corp Remington Air Conditioning Div Willey St Auburn NY
 Remington Arms Co Inc 939 Barnum Ave Bridgeport 2 Conn
 REMLAB—Hampden Engineering Corp
 REMOTAIRE—American-Standard
 REMOTROL—Midwest Electric Products Inc
 REMOTROL—Templeton Kenly & Co

RENAISSANCE—Globe Lighting Products Inc
 RENEWATRON—Bussmann Mfg Div
 REPAN—Versen (Kurt) Co
 REPAR—Versen (Kurt) Co
 REPICON—General Products Corp
 Republic Cretosoting Co 1615 Merchants Bank Bldg Indianapolis 4 Ind
 Republic Steel Corp Steel and Tubes Div 224 E 131 St Cleveland 8 Ohio
 RESISTOL—Collyer Insulated Wire Co
 RESISTOVL—G & W Electric Specialty Co
 RESISTRAC—Glastic Corp
 RESLOPE—Versen (Kurt) Co
 RESPOT—Versen (Kurt) Co
 RETRACT-O-REEL—Appleton Electric Co
 Retland Electric Co 3001 W Mission Rd Alhambra Calif
 Revere Copper & Brass Inc 230 Park Ave NY 17 NY
 Revere Electric Mfg Co 7420 N Lehigh Ave Chicago 48 Ill
 REVMASTER—Opad Electric Co
 Revolver Co 2000 86th St North Bergen New Jersey
 REVOLVO—Frick-Gallagher Mfg Co
 REVOLVO-RAY—Sireno Signal Mfg Corp
 REVUE—Versen (Kurt) Co
 REX—Air Controls Inc
 REX—Chain Belt Co
 REX—Code Corp
 REX-AIRATE—Air Controls Inc
 Rex Corp—see Brand-Rex Div
 Rex Metal Craft Inc 1717 Gent St Indianapolis 2 Ind
 REX-TUBE—Flexonics Div
 Rex Welder Co—see Rex Welder Div
 Rex Welder Div Peer Inc 1200 Milton St Benton Harbor Mich
 Rex Welder Sales Co—see Universal Welder Corp
 REXSELEN—Knopp Inc
 REXVANE—Westinghouse Electric Corp Sturtevant Div
 Reynolds Electric Co 3000 River Rd River Grove Ill
 Reynolds Metals Co Richmond 18 Va
 REZAK—Versen (Kurt) Co
 Rheem Califorme Corp 5922 Bowcroft St Los Angeles 16 Calif
 RHINO-HIDE—Pacific Electricord Co
 Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI
 Rhodes (M H) Inc 30 Bartholomew Ave Hartford Conn
 RIBBON HEAT—Cox and Co Inc
 RIBOHM—Ward Leonard Electric Co
 Rich (Phil) Fan Mfg Co Inc 2900 Caroline Houston 4 Texas
 Rich Lamp Mfg Co—see Stabrite Fluorescent Mfg Co
 Richards (J R) Co P O Box 482 Carnegie Pa
 Richards Mfg Co Ltd 152 Coit St Irvington NJ
 Richards-Wilcox Mfg Co 150 Third St Aurora Ill
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY
 RICHMOND—Miller Co
 RICHTEMP—Rich (Phil) Fan Mfg Co Inc
 Ridge Tool Co 400 Clark St Elyria Ohio
 RIDGID—Ridge Tool Co
 RIDGOLR—Ridge Tool Co
 Rieber (Frank) Inc—see Carlton Products Co
 RIMSET—Penn Controls Inc
 RINGCALL—Edwards Co Inc
 Ringsdorf Carbon Corp Box 22 East McKeesport Pa
 RIFLEX—Hatfield Wire & Cable Div
 Ripley Co Inc Factory St Middletown Conn
 RISERTHERM—Meredith Corp
 Rite-O-Lite Co 308 E Washington Blvd Los Angeles Calif
 RITEOHM—Ohmite Mfg Co
 RITEWAY—Building Service Co
 Rittenhouse Co Inc—see Emerson-Rittenhouse Co Inc
 River Smelting & Refining Co 4195 Bradley Rd (P O Box 5755) Cleveland 1 Ohio
 Riverside Mfg & Electrical Supply Co 10228 Michigan Ave Dearborn Mich
 RO-TITE—Curtis Lighting Div
 Robbins & Myers Inc 1345 Lagonda Ave Springfield Ohio
 Robbins & Myers Inc Fan Div—see Hunter Div
 Robby Electric Mfg Co 5900 Euclid Ave Cleveland 3 Ohio
 Roberson Inc 1539 NE 103 St Seattle 55 Wash
 Roberson (L N) Co—see Roberson Inc
 Robert Mfg Co 99 Dell Glen Ave Lodi NJ
 ROBERTA—House-O-Lite Corp
 ROBERTSHAW—Fulton Sylphon Div
 Robertson & Ruth 460 W Lake St Elmhurst Illinois
 Robertson Transformer Co Thornton Road Blue Island Ill
 Robinson Bracket Co 705 N 79 St East St Louis Ill
 ROBINTRONIC—Hewitt-Robins
 ROBOT—Miller Harris Instrument Co
 Robot Appliances Inc—see Robot Industries Inc
 ROBOT-EYE—Heat Timer Corp
 Robot Industries Inc 7041 Orchard St Dearborn Mich
 ROBOTEMP—Ulanet (George) Co
 ROBOTROL—Reliance Time Controls Inc
 Robotron Corp 21300 W Eight Mile Rd Detroit 19 Mich
 Roche (Paul C) Co Inc 11 Park Pl New York 7 NY
 Rockbestos Products Corp—see Rockbestos Wire & Cable Co
 Rockbestos Wire & Cable Co Nicoll and Canner Sts New Haven 4 Conn
 ROCKER-GLO—Pass & Seymour Inc
 ROCKET—Round (David) & Son Inc
 Rocket Devices Corp—see Star Expansion

ROCKING CONTACT—Allis-Chalmers Mfg Co
Rodal Mfg Co Inc 6th & Winor Sts Emmaus Pa
RODAR—Driver (Wilbur B) Co
ROFLEX—Rome Cable Div of Alcoa
Rogers Electric Laboratories 2651 Shaker Rd Cleveland Heights 18 Ohio
Rol-Away Truck Co—see Rol-Away Truck Mfg Co Inc
Rol-Away Truck Mfg Co Inc 6143 S E Foster Rd Portland 6 Ore
ROL-TOE—Templeton Kenly Co
ROLARC—Federal Pacific Electric Co
ROLEN—Rome Cable Div of Alcoa
Roll-A-Reel Co 4630 Reading Rd Cincinnati 29 Ohio
Roller (Wm G) Inc 159 Liberty Ave Mineola NY
Roller-Smith Corp—see Federal Pacific Electric Co
ROLLEREEL—Suttle Equipment Corp
Rollway Bearing Co Inc 541 Seymour St Syracuse 4 NY
ROLO-COLOR—Luxor Lighting Products Inc
ROLON—Rome Cable Div of Alcoa
ROMARINE—Rome Cable Div of Alcoa
Rome Cable Corp—see Rome Cable Div of Alcoa
Rome Cable Div of Alcoa 421 Ridge St Rome NY
ROME RIGID—Rome Cable Div of Alcoa
ROMEX—General Cable Corp
ROOM MATE—Celheat Inc
ROPRENE—Rome Cable Div of Alcoa
Rose Mfg Co 2700 W Barbary Pl Denver 4 Colo
ROSEAL—Rome Cable Div of Alcoa
ROSINX—Duntun (MW) Co
Ross Operating Valve Co 120 E Golden Gate Ave Detroit 3 Mich
Rostan Corp 101 Varick Ave Brooklyn 37 NY
ROTABIN—Kriegel-Gallagher Mfg Co
Rotary Concrete Drill Co 650 S Arroyo Parkway Pasadena 4 Calif
Roth Controls Inc Box 900 Evanston III
Roth Mfg Co—see Roth Controls Inc
Roto-Beam 1755-57 N Keeler Ave Chicago 39 III
ROTO-BIN-DICATOR—Bin-Dicator Co
ROTO-GLO—Pass & Seymour Inc
ROTO-GUARD—Bin-Dicator Co
ROTO-KOR—Kor-It Co Inc
ROTO-PUSH—Cutler-Hammer Inc
ROTO-STACKER—Crane Veyor Corp
ROTO STRIP—New-Ray Products Inc
ROTO TORK—Haydon (A W) Co
ROTO TROL—Healy-Ruff Co
ROTO-WITCH—Charles Machine Works Inc
ROTOBEAM—General Lighting Co
ROTOLECTOR—Kriegel Bros Universal Electric Stage Lighting Co Inc
ROTOLENS—Stebber Mfg Co
ROTOSPOOT—Rambusch Decorating Co
ROTOTROL—Westinghouse Electric Corp
ROTORTWIST—Star Expansion
Round (David) & Son Inc Box 9557 Cleveland 39 Ohio
ROUND WOUND—Line Material Industries
ROY-A-LITE—Terado Corp
ROYAL—Waveland Electric Co
Royal Electric Co Inc—see Royal Electric Corp
Royal Electric Corp 95 Grand Ave Pawtucket RI
Royal Electric Mfg Co 1122 E 87 St Chicago 19 III
ROYAL-NOARK—Royal Electric Corp
ROYALAG—Royal Electric Co
ROYALMATIC—Standard Electric Time Co
ROZONE—Rome Cable Div of Alcoa
RUBBER COAT—Wilbur Williams Co
RUBBER SOLDER—All-State Welding Alloys Co Inc
Ruberoid Co 733 Third Ave New York 17 NY
RUBRES—Co-operative Utilities Co Inc
RUBRGAS-SEEL—APM-Hexseal Corp
RUBRITE—Co-operative Utilities Co Inc
Ruby Chemical Co 68-70 McDowell St (P O Box 1108) Columbus 16 Ohio
Ruby Lighting Corp—see Lighting Dynamics Inc
Ruby-Phillite Corp 32-02 Queens Blvd Long Island City 1 NY
RUBYFLUID—Ruby Chemical Co
RUCCO—Ruby Chemical Co
RUGGED POWER—Scranton Storage Battery Corp
Ruggles-Klingemann Mfg Co Foster Court Salem Mass
RUHABOUT—Barber-Greene Co
RUPTAIR—Allis-Chalmers Mfg Co
RUPTOR—Allis-Chalmers Mfg Co
RUR-A-LINE—Plastic Wire & Cable Corp
RURALAY—General Cable Corp
Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich
Rush Wire Stripper Div—see Eraser Co Inc
RUSOPHENE—Rusgreen Mfg Co
Russell & Stoll Co Inc 125 Barclay St NY 7 NY
Rust-Oleum Corp 2425 Oakton St Evanston III
RUSTBOND—Carboline Co
RUSTICLITE—Gruber Bros Inc
Ryther Purdy Lumber Co Inc 501 Tiffany St New York 59 NY

S

S & C Electric Co 6601 Ridge Blvd Chicago 26 III
SCBGO—Southern Carbon Brush Co Inc
SCP—Superior Carbon Products Co
SCR DIMMER—Kriegel Bros Universal Electric Stage Lighting Co Inc
S I—Superior Insulating Tape Co

SIE—Southwestern Industrial Electronics Co
SKF Industries Inc Front St & Erie Ave Phila 32 Pa
SMC—St Marys Carbon Co
SPCO—Superior Porcelain Co
S & R—Sherman & Reilly Inc
SRT—Line material Industries
SVEA—Swedish Iron & Steel Corp
S-V BONDEZE—Phelps Dodge Copper Products Corp
SA-FUSE—Electric Machinery Mfg Co
SABER-TOOTH—Rawplug Co Inc
SABRE—Miller Co
SAF-FLEX—Starrett (L S) Co
SAF-T-AIR—United Electric Motor Co
SAF-T-ARC—Russell & Stoll Co Inc
SAF-T-GRIP—Miller Equipment Co Inc
SAF-T-LOK—Belt Electric Co
Safa Alarm Div Inc—see Fyr-Fyter Co Engineered Systems Div
SAFARI—Benjamin Electric Mfg Co
SAFE-FLEX—Starrett (L S) Co
SAFE-HI—Rose Mfg Co
SAFE-T-BEAM—Westinghouse Electric Corp Lamp Div
SAFE-T-CLIP—Industrial Devices Inc
SAFE-T-GLOW—Brach Mfg Co
SAFE-T-GRIP—Ideal Industries Inc
SAFE-T-KOOL—Active Specialty Co
Safe-T-Mike Corp 2904 Chapman Oakland 1 Calif
SAFE-T-OHM—Anderson (W E) Inc
SAFE-T-SEALS—Misenor Mfg Co Inc
SAFE-T-TAP—Keystone Mfg Co
SAFETECH—Capewell Mfg Co
Safety Belt-Lacer Co—see Armstrong-Bray & Co
Safety Car Heating Corp—see Safety Electrical Equipment Corp
Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn
SAFETY-GLO—Rodal Mfg Co Inc
SAFETY HOOK—Handy Angle Div
Safety Industries—see Safety Electrical Equipment Corp
Safety Live Line Tool Co 973 86th Ave Oakland 21 Calif
SAFETY MI—General Cable Corp
SAFETY PULL—Coffing Hoist Div
SAFETY-VALVE—Bussmann Mfg Div
SAFETY YELLOW—Woodhead (Daniel) Co
SAFETYBREAKER—Cutler-Hammer Inc
SAFEWAY—American Pulley Co
SAFEWAY—Safety Live Line Tool Co
SAFEWAY—Woodhead (Daniel) Co
SAFEWAY—Wright Hoist Div
Safeway Heat Elements Inc Middlefield St (P O Box 1109) Middletown Conn
SAFLEX—Square D Co
SAPATCH—Kriegel Bros
SAFREEM—Duro-Tes Corp
SAFRONT—Square D Co
SAFTTEST—Fleron (M M) & Son
Safway Steel Products Inc 6228 W State St Milwaukee 13 Wis
St Louis Brass Co—see Guth (Edwin F) Co
St Louis Malleable Casting Co 7701 N Conduit Ave St Louis 15 Mo
St Marys Carbon Co State St St Marys Pa
Sair Corp 5290 S Main St Akron 19 Ohio
Salem Tool Co 762 S Ellsworth Ave Salem Ohio
SALL—Adale Mfg Co
SAMSON—Couch (SH) Co Inc
SAMSON—Metalcraft Products Co Inc
SAND-SCOTT—Holub Industries Inc
Sanford Miller Co Inc 11 Lynch St Brooklyn 11 NY
Sangamo Electric Co 11th & Converse Springfield III
Sargent Electric Corp 630 Merrick Rd Lynbrook NY
Sasgen Derrick Co 3101 Grand Ave Chicago III
SAT-O-LITE—House-O-Lite Corp
SATELLITE—Prescotte Mfg Corp
SATELLUME—Ainsworth Lighting Inc
SATI-LITE—Electric Service Systems Inc
Sauerisen Cements Co 1045 N Canal St Pittsburgh 15 Pa
Save Lamp Corp—see Penetrat Corp
SAWZALL—Milwaukee Electric Tool Corp
SAXON—Benjamin Electric Mfg Co
Saxonburg Ceramics Inc P O Box 157 Saxonburg Pa
Saylor Electric Products Corp 277 Pierce St Birmingham Mich
SAYLORDUCT—Saylor Electric Products Corp
Scala Controls Inc P O Box 41 Delanco NJ
SCALLOP-CEL—Neo-Ray Products Inc
Scam Instrument Corp 3101 N Lowell Ave Chicago 41 III
Scharff (JF) Inc—see Kidde Ultrasonic & Detection Alarms Div
Schauer Machine Co—see Schauer Mfg Corp
Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio
Schenectady Chemicals Inc Schenectady 1 NY
Schenectady Varnish Co Inc—see Schenectady Chemicals Inc
Schoenberg (August) Inc P O Box 23 Brooklyn 37 NY
SCHOOLMASTER—Great Northern Mfg Corp
Schweitzer & Conrad Inc—see S & C Electric Co
Sciaky Bros Inc 4915 W 67 St Chicago 38 III
Scientific Electric Inc 105-109 Monroe St Garfield NJ
SCINTAGUN—Goldak Co Inc
SCINTILLITE—Sperry Inc
SCOOT-LITE—Woodward Machine Co
SCOPE—Stromberg Div General Time Corp
SCOTCH—Minnesota Mining & Mfg Co
SCOTCHCAST—Minnesota Mining & Mfg Co
SCOTCHFIL—Minnesota Mining & Mfg Co
SCOTCHKOTE—Minnesota Mining & Mfg Co

SCOTCHLOK—Minnesota Mining & Mfg Co
SCOTCHTITE—Minnesota Mining & Mfg Co
Scott (H H) Inc 111 Powder Mill Rd Waynard Mass
Scott (Herman Hosmer) Inc—see Scott (H H) Inc
SCOTTY—Shure Mfg Corp
Scranton Celomatic Battery Corp—see Scranton Storage Battery Corp
Scranton Aluminum Mfg Co 419 S Wyoming Ave Scranton Pa
Scranton Storage Battery Corp Archbald Pa
Scrayco Level Controls—see Scrayco Mfg Co
Scrayco Mfg Co 201 Greene Ave Middlesex NJ
SCRUI-ITS—Solar Electric Corp
SCRUI-LEADS—Rawplug Co Inc
SCRUI-TITE—Mastercraft Medical & Industrial Corp
SCRUI-TITE—Myers Electric Products Inc
Scruggs (Lloyd) Co—see Howard Industries Inc
SCRUIIN—Star Expansion
SCRULUG—Burdny Corp
SCULPTURAMA—Sunbeam Lighting Co
SEA BREEZE—Emerson Electric Mfg Co
SEA FOAM—Tevco Insulated Wire
Sea Gull Lighting Products Inc 2520 Morris St Philadelphia 45 Pa
Seaboard Products Corp Electric Heating Div 191 Frelinghuysen Ave Newark NJ
Seager Standard Carbon Co 291 Church St New York 13 NY
SEAL THRU—Eliza Metal Products Co
SEALED TIGHT—Royal Electric Corp
SEALFLEX—Universal Metal Hose Co
SEALNUT—Radio Frequency Laboratories Inc
SEALSTIX—Central Scientific Co
SEALTITE—Anaconda Metal Hose Div
SECONEC—Rugreen Mfg Co
SECOVAR—Sangamo Electric Co
SECURITY—United States Rubber Co
Security Insert Co 1300 Arch St Phila 7 Pa
Security Lightning Rod Co—see Security Mfg & Contracting Co
Security Mfg & Contracting Co 606-612 Pine St Burlington Wis
SECURIFLEX—Anaconda Wire & Cable Co
SECURCO—Southern Electric Equipment Co
Seeger-Williams Inc 4 Norman St Bridgeport 5 Conn
SEELBOLT—APM-Hexseal Corp
SEELRIVIT—APM-Hexseal Corp
SEELSKREW—APM-Hexseal Corp
SEELUX—Guth (Edwin F) Co
Seely Instrument Co Inc 377 Fourth St (P O Box 387) Niagara Falls NY
Sepp (L J) Co 2500 W North Ave Chicago 47 III
SEIZER—Xcelite Inc
SELCO—Seli (H H) Electric Co
SELCO—Spies Electric Works
SELECT-A-SPEDE—Allis (Louis) Co
SELECT-A-SWITCH—Solar Sonic Devices Inc
SELECT-AMP—Moloney Electric Co
SELECT-O-MATIC—Feiler Engineering & Mfg Co
SELECTROL—Electro Dynamic Div General Dynamics Corp
SELECTRON—Electro Dynamic Div General Dynamics Corp
SELEKTA—Associated American Winding Machines Inc
SELENIBRAKE—American Rectifier Corp
SELENICHARGER—American Rectifier Corp
SELENIDRIVE—American Rectifier Corp
SELENIFIER—American Rectifier Corp
SELENIVAC—American Rectifier Corp
SELETRON—General Instrument Rectifier Div
SELF-CHECKING—Sensitive Research Instrument Corp
SELF-LAMINATING—Westline E-Z-Code Div
Self-Lifting Piano Truck Co 423 N Main St Findlay Ohio
SELFDRILL—Star Expansion
SELFULBE—Keystone Carbon Co Inc
Seli (H H) Electric Co 3240 Dakota Ave Minneapolis 16 Minn
SELPO—Self-Lifting Piano Truck Co
SELMOTORS—Trombetta Solenoid Corp
SEMPER-SEAL—C & S Products Co
SEN-TEK—Euclid Electric & Mfg Co
SENIOR—Linemaster Switch Corp
Sensitive Research Instrument Corp 310 Main St New Rochelle NY
SENTINEL—Ellenco Inc
SENTINEL—Portable Light Co Inc
Sentry-Lite & Battery Div Hobby & Brown Electronic Corp 237 Sunrise Highway Rockville Centre NY
SEPCO—Steel Electric Products Co Inc
SEPRABLE—Appleton Electric Co
SEQUENSTART—Sola Electric Co
Sequoia Process Corp—see Sequoia Wire & Cable
Sequoia Wire & Cable Co 2201 Bay Rd (P O Box 1007) Redwood City Calif
SERVEN—Kearney (James R) Corp
SERVAIR—Rich (Phil) Fan Mfg Co Inc
SERVI-CLIP—Hunt-Pierce Corp
SERVI-LIFT—Hunt-Pierce Corp
SERVICE BUGS—Frankel Connector Co
SERVICE LITER—Revere Electric Mfg Co
SERVICE-MASTER—McCabe-Powers Body Co
SERVICESPOOL—Alpha Wire Corp
SERVSAFE—Thompson Electric Co
SERVISLEEV—Hubbard & Co
SERVIT—Burdny Corp
Servo-Tek Marine Inc—see Servo-Tek Products Co Inc
Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ
Servospeed Div Electro Devices Inc 4 Godwin Ave Paterson NJ
SESAME—Alliance Mfg Co Inc
SETTIE—US Expansion Bolt Co
Seton Name Plate Co Inc 50 Fifth St New Haven 15 Conn
Seyler Mfg Co—see Chance (AB) Co
SHAFTMOUNT—U S Electrical Motors Inc

Shalda Mfg Co Inc 156 W Providencia Ave Burbank Calif
Shallcross Controls Inc 2217-21 N 31 St Milwaukee 8 Wis
Shallcross Mfg Co Preston St Selma NC
SHALLOBEAM—Sunbeam Lighting Co
SHALLOPAMA—Sunbeam Lighting Co
SHALLOW-LINE—Benjamin Division Thomas Industries
Shaper Lighting Products 2343 Welcome Ave Richmond Calif
Shaw-Box Crane & Hoist Div Manning Maxwell & Moore Inc Muskegon Mich
Shaw-Perkins Mfg Co 201 E Carson St Pittsburgh 19 Pa
SHAWMUT—Chase-Shawmut Co
Shelby Electric Inc East US Highway #421 Shelbyville Ind
Shenango Furnace Co Centrifugal Casting Div West Third St Dover Ohio
Shenango Penn Mold Co—see Shenango Furnace Co
SHERARDUPT—National Electric Div
Sherman (H B) Mfg Co 22 Barney Battle Creek Mich
Sherman & Reilly Inc 1 Broad St Chattanooga 2 Tenn
Sherwin-Williams Co 101 Prospect Ave NW Cleveland 1 Ohio
SHIELD-ARC—Lincoln Electric Co
SHIPMASTER—Lewis-Shepard Products Inc
SHO-GLOBES—Luxor Lighting Products Inc
SHOCK PROOF—Industrial Transformer Corp
Shock-Rite Electric Fence Co—see Electric Service Systems Inc
SHOCK-STOPPS—Connecticut Hard Rubber Co
SHOK-ABSORBER—Royal Electric Corp
SHOK-PRUF—Cable Electric Products Inc
SHOKLESS—Kneisley Electric Co
SHOP-CADDY—Allied Mfg & Sales Co
SHOP KING—Precision Welder Mfg Co
SHOP-VAN—Vanguard Mfg Co
SHOPLIFTER—Economy Engineering Co
SHORTY—Black & Decker Mfg Co
SHOVELITE—Rambusch Decorating Co
Shox-Stok Inc Wellington Ohio
Shrader (FW) Co 11623 S Broadway Los Angeles 61 Calif
Shreveport Engineering Co—see Bar-Brook Mfg Co Inc
SHRUB-LITE—Keystone Lamp Mfg Corp
Shuford Mills Inc P O Drawer 340 Hickory NC
SHUR-CODE—Westline E-Z-Code Div
SHUR-FLO—Hays Mfg Co
SHUR-LGC—Buckles (Chris) Inc
SHUR-MOUNT—Swiveller Co Inc
SHURE DRIVE—Ramsot Fastening System
Shure Mfg Corp 1601 S Hanley Rd St Louis Mo
SHURE SET—Ramsot Fastening System
SHURFLO—Anchor Metal Co Inc
Shurite Meters 130 Wallace St New Haven 8 Conn
SHURLOK—Pass & Seymour Inc
SHURTAPE—Shurford Mills Inc
SHUT-O-VENT—Reed Unit-Fans Inc
SHUTBRACK—Adam (Frank) Electric Co
SIAMESE—Bradley Semiconductor Corp
SIANOR—Puel Enterprises Inc
SIDALARM—Newark District Telegraph Co
SIDE-O-RAY—Duray Fluorescent Mfg Co
Siebring Mfg Co George Ionia
Sieglar Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY
SIEMARC—Southwestern Industrial Electronics Co
SIERRA-BIPLEX—Sierra Electric Corp
Sierra Electric & Mfg Co—see Sierra Electric Corp
Sierra Electric Corp 15100 S Figueroa (P O Box 85) Gardena Calif
SIERRA-LOK—Sierra Electric Corp
SIERRA-TEX—Sierra Electric Corp
SIERRA-TRIPLEX—Sierra Electric Corp
SIERRALITE—Sierra Electric Corp
SIERRAPLEX—Sierra Electric Corp
SIERRAWARE—Sierra Electric Corp
SIGHTLINE—Sunbeam Lighting Co
SIGHTMASTER—Art Specialty Co
SIGHTMASTER—Flexo International Corp
Sightmaster Corp 50 Aleppo St Providence RI
SIGHTRON—Lightolier Inc
SIGMA—Wakefield Lighting Div
SIGNA-GLOW—Industrial Development Labs Inc
Signal Electric Div King-Seely Corp 1800 13th St Menominee Mich
Signal Electric Mfg Co—see Signal Electric Div
Signal Engineering & Mfg Co—see Wheelock Signals Inc
SIGNAL-MASTER—Blonder-Tongue Laboratories Inc
SIGNAL MAT—Partrick & Wilkins Co
Signalite Fuse Co—see Signalite Inc
Signalite Inc 37-41 Neptune Highway Neptune NJ
SIGNALMASTER—Goldak Co Inc
SIGNET—Bramco Inc
Signet Controls 3205 S E 13th Ave Portland 2 Ore
SIL-ARAN—Mid-States Welder Mfg Co
SIL-BES—Electro-Technical Products Div
SIL BOND—United Wire & Supply Corp
SIL-CLAD—Electric Machinery Mfg Co
SIL FLUX—United Wire & Supply Corp
SIL-I-TRAN—Mid-States Welder Mfg Co
SIL-TUBE—Kneisley Electric Co
SILASTIC—Dow Corning Corp
SILCAD—Yardney Electric Corp
SILCO BEST—Emerson Plastics Corp
SILCOBEST—Silicone Insulation Inc
SILCONIC—Gould-National Batteries Inc
SILENT—Leviton Mfg Co Inc
Silent Hoist & Crane Co 641 63rd St Brooklyn 20 NY
SILENT-KING—Cable Electric Products Inc
SILENTVANE—Westinghouse Electric Corp Sturtevant Div

SILFLO—All-State Welding Alloys Co Inc
SILHOUETTE—Peteco Inc
SILIC-O-NETIC—Heinemann Electric Co
SILIC-O-RINGS—APM-Hexseal Corp
Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY
SILICONIC—Willard Sales
SILOTEX—Anasoda Wire & Cable Co
SILTUBE—All-State Welding Alloys Co Inc
SILV-A-FLEX—Plastic Wire & Cable Corp
SILVER BEAUTY—Triple-A Specialty Co
SILVER DOT—Silvray Lighting Inc
SILVER KING—Arro Expansion Bolt Co
SILVER KING—General Control Co
SILVER LABEL—Dunton (MW) Co
SILVER SPOT—Silvray Lighting Inc
SILVER SPRAY—Luxor Lighting Products Inc
SILVERCEL—Yardney Electric Corp
SILVERFLEX—Electro Insulation Corp
SILVERLINE—Thor Power Tool Co
SILVERLINER—Westinghouse Electric Corp
SILVERSLICK—Republic Steel Corp
Silvery Pipe Bender Co 2215 Brighton Ave Kansas City 27 Mo
Silvray Lighting Inc 100 Main St Bound Brook NJ
SIMCONEX—Simplex Wire & Cable Co
Simes Co Inc 114 15th Ave College Point LI NY
Simmonds Aerocessories Inc—see Simmonds Precision Products Inc
Simmonds Precision Products Inc Tarrytown NY
Simmonds Saw and Steel Co 470 Main St Fitchburg Mass
Simonski (G S) Co—see Lucifer Furnaces Inc
SIMPLEX—Oliver Electrical Mfg Co
SIMPLEX—Templeton Kenly & Co
Simplex Co Inc 1139-41 N MacArthur Blvd Springfield III
Simplex Time Recorder Co 24 S Lincoln St Gardner Mass
Simplex Wire & Cable Co 79 Sidney St Cambridge 39 Mass
SIMPLYTROL—Assembly Products Inc
Simpson Co 1470 Doolittle Rd San Leandro Calif
Simpson Electric Co 5200 W Kinzie St Chicago 44 III
Simpson (Mark) Mfg Co Inc 32-28 49th St Long Island City 3 NY
Simpson Screen Co—see Simpson Co
Sinko Mfg & Tool Co 7310 W Wilson Ave Chicago 31 III
SILOUX—Albertson & Co Inc
SIRENO—Portable Light Co Inc
Sireno Co Inc—see Sireno Signal Mfg Corp
Sireno Signal Mfg Corp 65 Passaic Ave Kearny NJ
SISCO—Swedish Iron & Steel Corp
Sittler Corp 18 N Ada St Chicago 7 III
60th ANNIVERSARY—Garcy Lighting Div
SKALLOPING—Wiss (J) & Sons Co
SKANDIA—Eagle Mfg Co
SKEDDODLE—Reynolds Electric Co
SKIDMORE—Equipment Corp of America
Skill Corp 5033 Elston Ave Chicago 30 III
SKILDRILL—Shallcross Controls Inc
SKILSAW—Skill Corp
SKILSAW—Shallcross Controls Inc
Skillaw Inc—see Skill Corp
Skinner Chuck Co—see Skinner Precision Industries Inc
Skinner Electric Valve Div
Skinner Precision Industries Inc Skinner Electric Valve Div 95 Edgewood Ave New Britain Conn
SKIP TOOTH—Nye Tool Co
SKULLGARD—Mine Safety Appliances Co
SKY-BLAST—Robbins & Myers Inc
SKY-LUME—Modern Light Co Inc
SKY/LUX—Curtis Lighting Div Curtis-All Brite
SKY-RIDE—Allied Mfg & Sales Co
SKY STREAK—American Electric Cable Co
SKY-TIE—Adaleit Mfg Co
SKY-VENT—Buffalo Forge Co
SKYDOME—Nemco Electric Co
SKYLENS—Lightonics
SKYLIFT—AUTOMATIC Div of Yale & Towne Mfg Co
SKYLIKE—Silvray Lighting Inc
SKYLINE—Arex Co
SKYLINER—Electro Lighting Co
SKYLINER—Peteco Inc
SKYLITE—Mole-Richardson Co
SKYLOUVER—Electro Lighting Co
SKYLUME—Electro Lighting Co
SKYRAY—Electro Lighting Co
Skyworker Corp—see United States Air Conditioning Corp
Skyworker Div Emhart Mfg Co—see United States Air Conditioning Corp
Slater Appliances Inc—see Slater Electric Inc
Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY
Slater Electric & Mfg Co Inc—see Slater Electric Inc
Slaughter Co College & Young Sts Piqua 5 Ohio
SLEIGH-O-LITE—Cable Electric Products Inc
SLENDERLINE—Solar Light Mfg Co
SLIMFIN—Tuttle & Kift Inc
SLIMFLUX—Guth (Edwin F) Co
SLIPKNOT—Plymouth Rubber Co Inc
SLO-LAG—Eagle Electric Mfg Co Inc
SLO-SYN—Superior Electric Co
Sloan Mfg Co 7606 N Clybourn Ave Sun Valley Calif
SLUGIN—Star Expansion
SLUMBER GLO—Rodalde Mfg Co Inc
Small Motors Inc 2076 Elston Ave Chicago 14 III
SMALL TALK—Simpson (Mark) Mfg Co Inc
SMITH DOLAND—Electric Art Inc
Smith & Dore Mfg Co—see Ludlow Textile Products
Smith-Gates Corp Farmington Conn
Smith (F A) Mfg Co—see Fasco Industries
Smith Welding Equipment Div Tescom Corp 2633 4th St S E Minneapolis 14 Minn

Smithcraft Corp 217 Everett Ave Chelsea 50 Mass
Smithcraft Lighting—see Smithcraft Corp
SMOKE-EYE—Heat Timer Corp
SMOKEGAGE—Photomation Inc
Smoot-Holman Co 321 N Eucalyptus Ave (P O Box 4097) Inglewood Calif
SMOOTH JAW—Champion DeArment Tool Co
SMOOTHMATE—All-State Welding Alloys Co Inc
SMOOTHIE—Circle F Mfg Co
SNAKE CHARMER—Barth Corp
SNAKE LEADER—Burbank Electrical Products
SNAP-IN—Reichert Float & Mfg Co
SNAP-ON—Tomic Sales & Engineering Co
Snap-on-Tools Corp 8028 28th Ave Kenosha Wis
SNAPE—Blackhawk Industries
SNAPE—Woodhead (Daniel) Co
SNAPICOL—Wiremold Co
SNAPIN—Star Expansion
SNAPIT—Cable Electric Products Inc
SNAPLOX—Benjamin Division Thomas Industries Inc
SNIFF-O-MISER—Hoyt Mfg Corp
SNO-FLAKE—Curtis Lighting Div
SNO-MELTER—Easy-Heat Inc
SNORKEL—Nemco Electric Co
SNOWLITE—Luxor Lighting Products Inc
SNUB-SEAT—Anderson Electric Corp
SNUGFIT—Paine Co
Snyder (M L) & Son Inc 1897 E York St Philadelphia 25 Pa
So-Cal Electro Products Inc 4423 W Jefferson Blvd Los Angeles 16 Calif
Soapstone Co—see Soapstone Duct Co
Soapstone Duct Co 3985 Beach St Oakland Calif
SOCKET CINCHER—Kees (F D) Mfg Co
SODERTITE—G & W Electric Specialty Co
SOFT-GLO—Luxor Lighting Products Inc
Sola Electric Co 1717 Busse Rd Elk Grove Village III
Sola Electric Div Basic Products Corp—see Sola Electric Co
Solar Electric Corp 121 Central Ave Warren Pa
Solar Light Mfg Co 1990 Mannheim Rd Melrose Park III
Solar Sonic Devices Inc Box 65 Hicksville LI NY
SOLARLITE—Solar Light Mfg Co
SOLARSPOT—Mole-Richardson Co
SOLATROL—Solar Sonic Devices Inc
SOLATRON—Sola Electric Co
SOLAVOLT—Sola Electric Co
SOLDERALL—Brach Mfg Co
SOLDEREZE—Phelps Dodge Copper Products Corp
SOLDERMASTER—Hexacon Electric Co
SOLDERUX—Mico Instrument Co
SOLID-FIL—Advance Transformer Co
SOLITROL—Ward Leonard Electric Co
Solux Corp 58-17 28th Ave Woodside 77 LI New York
SOLVO-STAT—Hoyt Mfg Corp
SONALARM—Scott (H H) Inc
SONARETE—Electro-Solid Controls Inc
Sonotone Corp Elmsford NY
Soreng Div—see Control Co of America
Sorensen Richards Ave South Norwalk Conn
Sorgel Electric Co 838B W National Ave Milwaukee 4 Wis
Sorgel Transformer Co—see Sorgel Electric Co
Sound Equipment Corp—see Kwikheat Mfg Co
SOUND GUARD—Progress Mfg Co Inc
South River Metal Products Co Inc 377 Turnpike South River NJ
Southco Div South Chester Corp Lester Pa
Southeast Lighting Inc 521 E 20 St Charlotte 1 NC
Southern Carbon Brush Co Inc 7 18th St SW (P O Box 1710) Birmingham 1 Ala
Southern Electrical Co—see Olin Conductors
Southern Electrical Equipment Co 308 W Bland at Mint St Charlotte 3 NC
Southern New England Ultraviolet Co Newfield St Middletown Conn
Southwestern Industrial Electronics Co 10201 Westheimer (P O Box 22187) Houston 27 Tex
Southwire Co Carrollton Ga
SOVEREIGN—Miller Co
SPACE LITER—Sun-Lite Mfg Co
SPACE SAVER—Hyster Co
SPACEGRID—Ainsworth Lighting Inc
SPACELITER—Stebor Div Pyle-National Co
SPACEMASTER—Lewis-Shepard Products Inc
SPACIALITE—Ainsworth Lighting Inc
SPANG—Armco Div
Spang-Chaffant Div—see Armco Div
SPANGLEAM—Armco Div
SPANTAP—Burdny Corp
SPARKELITE—Duro-Test Corp
SPARTAN—Atlas Overhead Door Co
Spartan Electric Radiator Corp 1500 W Blanche St Linden NJ
SPATIALITE—Manning (R A) Co Inc
SPATTERPROOF—Radiant Lamp Corp
Spaulding Fibre Co Inc 310 Wheeler St Tonawanda NY
SPAULDITE—Spaulding Fibre Co Inc
SPAULDO—Spaulding Fibre Co Inc
SPEAR—Jordan Co
Special Products Co Chattanooga 6 Tenn
Specialties Inc 2936 Sacramento St Pittsburgh 4 Pa
SPECTROLUX—Luxor Lighting Products Inc
SPECTROSIL—Thermal American Fused Quartz Co
SPEED BAND—Capewell Mfg Co
SPEED CUT—Beaver Pipe Tools Inc
SPEED-KING—Beaver Pipe Tools Inc
SPEED-LINE—Garcy Lighting Div
SPEED-LOK—Cable Electric Products Inc
SPEED MEASURE—Waldman (John J) Co
SPEED-O-MATIC—Beaver Pipe Tools Inc
SPEED-RAY—Apextro Products Co

SPEED SPIRAL—Super Tool Co
 SPEED THRU—Mercury Hydraulics Inc
 SPEEDAIRE—Dayton Electric Mfg Co
 Speeder Mfg Co 418 S Wyman St Roxford Illinois
 SPEEDI NO-BOLT—Tonic Sales & Engineering Co
 SPEEDLINE—Electrical Tubular Products Inc
 SPEEDMASTER—Accurate Electronics Co
 SPEEDMASTER—Lewis-Shepard Products Inc
 SPEEDNAIL—Allmetal Engineering Inc
 SPEEDOLET—Killark Electric Mfg Co
 SPEEDOMAX—Leeds & Northrup Co
 SPEEDRANGERS—Master Electric Div Reliance Electric & Engineering Co
 SPEEDSAW—Thor Power Tool Co
 SPEEDTOOLS—Thor Power Tool Co
 SPEEDUCT—Empire Metal Box Co Inc
 SPEEDWAY—Wright Hoist Div
 SPEEDWIRE—Slater Electric Inc
 Spencer Display Co—see General Indicator Corp
 Spencer Industries 1508 N Mascher St Phila 22 Pa
 Spencer Studios—see Spencer Industries
 Spencer Thermostat Div Metals & Controls Corp—see Metals & Controls Inc
 Spencer Turbine Co 486 New Park Ave Hartford 6 Conn
 Spero Electric Corp 18222 Lanken Ave Cleveland 19 Ohio
 Sperti Faraday Inc—see Faraday Inc
 SPHERE—Versen (Kurt) Co
 SPHEROLITE—Line Material Industries
 Spier Electronics Inc 1949 McDonald Ave Brooklyn 23 NY
 Spies Electric Works 564 W Van Buren St Chicago 7 Ill
 Spincraft Inc 4122 W State St Milwaukee 8 Wis
 SPINFAST—Scanton Storage Battery Corp
 SPIRAFIL—Pheps Dodge Copper Products Corp
 SPIRALITE—General Insulated Wire Works
 SPIRAKORE—General Electric Co
 SPIRAL-DRIVE—Arro Expansion Bolt Co
 SPIRAL WRAP—Ilumitronic Engineering Corp
 SPIRALOK—American Metal Moulding Co
 SPIRALON—Suprenant Mfg Co
 SPLAC—Westline E-Z-Code Div
 SPLICIT—Burdny Corp
 SPOLARC—All-State Welding Alloys Co Inc
 SPORTLITE—Duro-Test Corp
 SPORTO—Appleton Electric Co
 SPORTOFLOOD—Appleton Electric Co
 SPORTSLITER—Stebor Div Pyle-National Co
 SPORTSMAN—Ray-O-Vac Co
 SPOTTIE—Kuehn Mfg Co
 SPOTTY—Curtis Lighting Div Curtis-All Brite Lighting
 Sprague Electric Co North Adams Mass
 Sprague Specialties Co—see Sprague Electric Co
 SPREADLITER—Stebor Div Pyle-National Co
 SPRING-A-LITE—Joy Mfg Co
 Spring City Electrical Mfg Co Spring City 85 Pa
 Spring City Foundry Co—see Spring City Electrical Mfg Co
 Spring Load Mfg Corp 6332 Maynard Ave Seattle Wash
 SPRING-O-MATIC—Industrial Electric Reels Inc
 SPRING WING—Paine Co
 SPRING WINGS—Rawplug Co Inc
 SPRINGING—Star Expansion
 Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn
 Square D Co Executive Plaza Park Ridge Ill
 Square D Co Electric Controller & Mfg Div 4493 Lee Rd Cleveland 28 Ohio
 SQUARE DUCT—Square D Co
 SQUEEZON—Kearney (James R) Corp
 STA-KLEEN—Slater Electric Inc
 STA-KON—Thomas & Betts Co
 STA-LOC—Mallory (P R) & Co Inc
 STA-OPEN—Royal Electric Corp
 Sta-Tite Mfg Co 2000 Wyandotte Kansas City 8 Mo
 STA-VO-TROL—General Electric Co
 Sta-Warm Electric Co 53 N Chestnut St Ravenna Ohio
 Stab-Rite Electric Products Co—see Stabrite Fluorescent Mfg Co
 STAB-LOK—Federal Pacific Electric Co
 STABIL-GLOW—Blue M Electric Co
 STABIL-THERM—Blue M Electric Co
 STABILINE—Superior Electric Co
 STABREAKER—Federal Pacific Electric Co
 Stabrite Fluorescent Mfg Co 3550 Northwest 49 St Miami Fla
 Stackpole Carbon Co Stackpole St St Marys Pa
 Stahl Metals Products Inc 4750 W 160 St Cleveland 35 Ohio
 Stahl Bros Inc Belding Mich
 STAIRCART—Di-Acro Corp
 STAIRMASTER—Fairbanks Co
 STALEY—Electric Switch Corp
 STAMFAN—Stamford Fan Co Inc
 Stamford Fan Co Inc 4 South St Stamford Conn
 Stamford Lighting—see Stamford Metal Specialty Co
 Stamford Metal Specialty Co Inc 429 W Broadway New York 12 NY
 Stampings Inc Suite 314 321 24th St Rock Island Ill
 Stanat Mfg Co Inc 524 Shames Dr Westbury NY
 Stanat Tool Machine Co—see Stanat Mfg Co Inc
 STANCOTE—Westwood Cable Corp
 STANDARD—Circle F Mfg Co
 Standard Asbestos Mfg Co 860 Evergreen Ave Chicago 22 Ill
 Standard Electric Div Standard Dayton Corp P O Box 1001 Dayton 1 Ohio
 Standard Electric Mfg Co Inc Haddon Ave West Berlin NJ
 Standard Electric Co Inc P O Box 6356 San Antonio 9 Tex

Standard Electric Time Co 89 Logan St Springfield 2 Mass
 Standard Electrical Products Co 2240 E Third St Dayton 3 Ohio
 Standard Portable Cord Co Inc Mayville NY
 Standard Transformer Co 140 Dana St N E Warren Ohio
 Standard Wire & Cable Co—see Westwood Cable Corp
 STANDCO—Sticht (Herman H) Co Inc
 STANEON—General Cable Corp
 STANFLEX—Westwood Cable Corp
 Stanley Electric Tools—see Stanley Power Tools Div
 Stanley Power Tools Div Stanley Works New Britain Conn
 STAPUT FAIRLEADER—Barry (Williams B) Co
 STAR—Standard Electric Co Inc
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY
 Star Expansion Mountaineer NY
 Star Expansion Bolt Co—see Star Expansion
 STAR-GLO—Electro Lighting Corp
 STAR GLOW—Modern Light Co Inc
 Star Kimble Motor Div—see Safety Electrical Equipment Co
 STAR-LINE—Delta-Star Electric Div
 STAR-LUX—Curtis Lighting Div
 STAR-LUX—Revere Electric Mfg Co
 STAR PIN—Star Expansion
 Star Porcelain Co Muirhead Ave Trenton 9 NJ
 STAR STRIKER—Star Expansion
 STAR STUD—Star Expansion
 STARBRITE—Comet Lamp Co
 STARLINE—Electro-Mechanical Instrument Co
 Starrett (LS) Co Athol Mass
 STARSTUD—Star Expansion
 START-O-METIC—Airsco Mfg Co
 STARTZIT—Aircraft Specialties Inc
 STAT-O-MATIC—Kearfoot Div General Precision Inc
 STAT-PACK—Magnetic Amplifiers Div
 STATA—Square D Co
 STATELINE—Howard Industries Inc
 States Co 19 E New Park Ave Hartford 6 Conn
 STATICATOR—Anderson (W E) Inc
 STATICATOR—Hewson Co Inc
 STATICK—Hirschman-Pohle Co Inc
 STATIKIL—Doyle (JE) Co
 STATISCOPES—Minerallac Electric Co
 STATOROL—General Electric Co
 STATOROL—Superior Electric Co
 Stauffer Chemical Co Molded Products Div 3211 E 26 St Los Angeles 23 Calif
 STAVOLT—Christie Electric Corp
 STAXAUSTER—Allen Cooler & Ventilator Inc
 STAXRITE—Cutler-Hammer Inc
 STAZIN—Star Expansion
 Stearns Electric Corp 120 N Broadway Milwaukee 2 Wis
 Stearns Magnetic Inc—Stearns Electric Corp
 Steber Div Pyle-National Co 2700 Roosevelt Rd Broadview Ill
 Steber Mfg Co—see Steber Div Pyle-National Co
 STEBERLITE—Stebor Div Pyle-National Co
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa
 Steel Electric Products Co Inc 5602 18th Ave Brooklyn 4 NY
 Steel & Tubes Inc—see Republic Steel Corp
 STEELARC—All-State Welding Alloys Co Inc
 Steelcut Co Republic Steel Bldg Youngstown Ohio
 STEELFLEX—Universal Metal Hose Co
 STEELGRIP—Armstrong-Bray & Co
 STEELTITE—Eliza Metal Products Co
 STEELWING—Hubbard & Co
 Steiner-Ives Co Springfield Rd Union NJ
 Stenco Mfg Co Box 9024 Stockyards Sta Denver 16 Colo
 STEMMANN—Ringsdorf Carbon Corp
 STERILAIR—Ultra-Violet Products Inc
 STERILAMP—Westinghouse Electric Corp Lamp Div
 Sterling Blower Co 791 Windsor St Hartford Conn
 Sterling Electric Motors Inc—see Liem-Pacific Inc
 Sterling Siren Fire Alarm Co Inc 12 Bartlett St Rochester 8 NY
 Sternberg Mfg Co 4510 Addison St Chicago 41 Ill
 Sterner Industries Winsted 1 Minn
 Stetson Mfg Co 1223 Circle Ave Forest Park 1 Ill
 Stevens Appliance Truck Co Norton Rd (P O Box 897) Augusta Ga
 STEWART-AIRE—Stewart Industries Inc
 Stewart Bros Div Instrument Laboratories 315 W Walton Pl Chicago 10 Ill
 Stewart Industries Inc 320 E St Joseph St Indianapolis 2 Ind
 Stewart Mfg Co Inc—see Stewart Industries Inc
 Sticht (Herman H) Inc 27 Park Place New York 7 NY
 STICK-VAR—Electro-Technical Products Div
 STICKLEBACK—Tec Imports Inc
 Stimple & Ward Co P O Box 1102 Pittsburgh 37 Pa
 STIRRUP—Burdny Corp
 STIXWEL—Clifton Mfg Co Inc
 STOCK PICKER—Roll-Away Truck Mfg Co Inc
 Stocker & Yale Inc Green St Marblehead Mass
 STOCKLITE—Appleton Electric Co
 STOK-FOUNT—International Electric Fence Co Inc
 Stokes (F J) Corp 5500 Tabor Rd Philadelphia 20 Pa
 Stokes (F J) Machine Co—see Stokes (F J) Corp
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ
 Stone Mfg Co—see Stonco Electric Products Co
 Stone Paper Tube Co 900 Franklin St N E Washington 17 DC
 Stonite Coil Corp US Highway 130 Yardville NJ
 STORAGE MASTER—Haertel (Walter) Co
 Stow Mfg Co 162 Shear St Binghamton NY

Stradley Engineering Co P O Box 6006 Pittsburgh 11 Pa
 STRAIGHT-LINE—Lyon Rural Electric Co
 STRAINRITE—Star Porcelain Co
 STRAIT-LINE—Irwin Auger Bit Co
 STRATE-LINE—Pyle-National Co
 Stratfield Co 434 Grand St Bridgeport 4 Conn
 STRATO-LUX—Curtis Lighting Div
 STRATO-RAY—Emerson-Pryne Co
 STREAM COOLED—Baldor Electric Co
 STREAMER-LITE—Luxor Lighting Products Inc
 STRESS-SPUN—American Concrete Div
 STRIALUX—Lightolier Inc
 STRIKER—Star Expansion
 STRING-A-LITE—Joy Mfg Co
 STRINGER—Utilities Safety Supply Co Inc
 STRIP EASE—Radix Wire Corp
 STRIPMASTER—Ideal Industries Inc
 STRIPPHM—Ward Leonard Electric Co
 STRIPSEAL—Burdny Corp
 STROBOLUME—General Radio Co
 STROBOTAC—General Radio Co
 Stromberg Div General Time Corp 135 S Main St Thomaston Conn
 Stromberg Electric Co—see Stromberg Div General Time Corp
 Stromberg Time Corp—see Stromberg Div General Time Corp
 STRUCTOR—Steel City Electric Co
 Struthers-Dunn Inc Pitman NJ
 STUD DRIVER—Remington Arms Co Inc
 STUD-PINS—Fastway Fasteners Inc
 STUDIO ONE—Westinghouse Electric Corp Lamp Div
 STYLIST—Electro Lighting Corp
 STYLEX—Lightonics
 STYROFLEX—Natvar Corp
 SUBALOX—Subox Inc
 SUBMATIC—Franklin Electric Co Inc
 SUBMERSIPOOL—Franklin Electric Co Inc
 Subox Inc Fairmount Plant Hackensack NJ
 SUBURBAN—Reed Unit-Fans Inc
 SUBURBANITE—Miller Co
 SUBURBANITE—Miller Co
 Sular Laboratories Inc 1197 McCarter Highway Newark NJ
 SUDDEN DEPTH—Paine Co
 Suffix Corp 33-40 57th St Woodside 77 NY
 Sulfo Inc 1143 E Jersey St Elizabeth 4 NJ
 Sultan Electric Co—see Acme Lighting & Mfg Co
 Sultan Lighting Co—see Acme Lighting & Mfg Co
 Summit Instrument Co—see Seely Instrument Co Inc
 SUMPTROL—Square D Co
 Sun Electric Products Inc 28 S Day St Orange NJ
 Sun-Heat Inc 998 E Woodbridge Detroit 7 Mich
 Sun-Lite Mfg Co 2555 Bellevue Ave Detroit 7 Mich
 Sun-Tron Corp—see Sun-Tron Div
 Sun-Tron Div Methods Electronics Inc 1700 Hicks Rd Rolling Meadows Ill
 Sunbeam Lighting Co 777 E 14th Pl Los Angeles 21 Calif
 Sunbeam Visionaire Lighting Co—see Sunbeam Lighting Co
 Sundh Electric Co—see Clark Controller Co
 Sunrise Products Co—see Vemaline Products Co
 Sunshine (John) Chemical Co Inc 600 W Lake St Chicago 6 Ill
 SUNSTREAM—Economaster Sales Inc
 SUNSWITCH—Ripley Co Inc
 Sunwarm Inc 1601 Jared Dr (P O Box 266) Kingsport Tenn
 SUPAIRTHERMAL—Nordberg Mfg Co
 SUPER—Surelite Products Co
 SUPER CORONOL—General Electric Co Wire & Cable Dept
 SUPER DELUX 45—Duro-Test Corp
 SUPER DREADNAUGHT—Gould-National Batteries Inc
 SUPER-EONITE—Kaiser Aluminum & Chemical Sales Inc
 SUPER-GRIP—Diamond Expansion Bolt Co Inc
 SUPER HI—Westinghouse Electric Corp Lamp Div
 SUPER INDUSTRIAL—National Specialties Co Inc
 SUPER-KILL—Southern New England Ultraviolet Co
 SUPER-LAG—Bussmann Mfg Div
 SUPER-LOK—Stebor Div Pyle-National Co
 SUPER MAGNET—Cutler-Hammer Inc
 SUPER POWER—Coffing Hoist Div
 SUPER-POWER—Ramset Fastening System
 SUPER SERVICE—Accurate Mfg Co
 SUPER SERVICE—General Cable Corp
 SUPER SERVICE—National Super Service Co
 SUPER 66—Eagle-Picher Co
 SUPER SPEED-LINE—Garco Lighting Div Garden City Plating & Mfg Co
 SUPER-STIK—Superior Insulating Tape Co
 SUPER SUCTION—National Super Service Co
 Super Tool Co 21650 Hoover Rd Detroit 13 Mich
 SUPER-WHITE—Duro-Test Corp
 SUPERBUILT—Electrical Mfg Co
 SUPERCON—Superior Electric Co
 SUPERCYCLE—Chicago Pneumatic Tool Co
 SUPERFORMED—Fanner Mfg Co Electrical Products Div
 SUPERGRIPS—Fanner Mfg Co
 SUPERIOR—Champion DeArment Tool Co
 SUPERIOR—Round (David) & Son Inc
 SUPERIOR—Wall (P) Mfg Co
 Superior American Fire Alarm Div—see Fyr-Fyter Co
 Engineered Systems Div
 Superior Appliance Co—see Superior Interlock Corp
 Superior Carbon Products Co 9115 George Ave Cleveland 5 Ohio
 Superior Electric Co 383 Middle St Bristol Conn
 Superior Electric Mfg Co Inc—see Eagle Electric Mfg Co Inc
 Superior Insulating Tape Co 3100 Lambdin Ave St Louis 15 Mo
 Superior Interlock Corp 73-39 Central Ave Glendale 27 NY
 Superior Mfg Co—see Superior Staple Mfg Co

Superior Porcelain Co 931 1/2 Market St Parkersburg W Va
Superior Staple Mfg Co 40 Commercial St Fitchburg Mass
Superior Switchboard & Devices Div Union Metal Mfg Co P O Box 590 Canton 1 Ohio
SUPERJUSTABLE—Williams (J H) & Co
SUPERKING—Monarch Electric Div
SUPERMARKETER—Miller Co
SUPERMASTER—Willard Sales
SUPERVAL—Revere Electric Mfg Co
SUPERREACH—Williams (J H) & Co
SUPERSEAL—General Cable Corp
SUPERSOCKET—Williams (J H) & Co
SUPERSPLICES—Fanner Mfg Co
SUPERSYN—Western Gear Corp
SUPERTech—Capewell Mfg Co
SUPRETEL—General Cable Corp
SUPERTITE—Engelhard Industries Inc
SUPRAMICA—Mycalex Corp of America
SUPREME—Kaiser Aluminum & Chemical Sales Inc
SUPRENE—Scranton Storage Battery Corp
Supreme Electric Products Co 194 Vassar St Rochester 7 NY
Supreme Lighting Co 600 E Turner St Los Angeles Calif
SUPRENE—Collyer Insulated Wire Co
Supro Lux Mfg Co Inc 406-416 E 161 St New York 51 NY
SUR-GROUND—So-Cal Electro Products Inc
SURCO—Surprenant Mfg Co
SURE-BUILT—Shure Mfg Corp
SURE GRIP—Bridgeport Hardware Mfg Corp
SURE-LITE—House-O-Lite Corp
SURELITE—Jogan Industries
Surelite Products Co 368 E 148 St New York 55 NY
Surety Rubber Co North High St Carrollton Ohio
SURFA-LITE—Electric Lighting Corp
SURFA-ETCH—Rust-Oleum Corp
SURFA-SELE—Rust-Oleum Corp
SURFACEDUCT—National Electric Div
SURFACELINE—Miller Co
SURFEX—Pass & Seymour Inc
SURGEON—Ward Leonard Electric Co
SURFLENE—Surprenant Mfg Co
SURFLEX—Surprenant Mfg Co
SURFLOW—Surprenant Mfg Co
Surprenant Mfg Co 199 Washington St Boston 8 Mass
Surrette Storage Battery Co Inc Jefferson Ave Salem Mass
SURVO—Surprenant Mfg Co
Suttle Equipment Corp 135 S LaSalle St Chicago 3 Ill
Swan Mfg Co 1801 W 26 St Vancouver Wash
SWAN-STATS—Swan Mfg Co
SWEATRITE—Dunton (MW) Co
SWEDG-ON—Lenco Inc
Swedish Iron & Steel Corp 910 Westfield Ave Elizabeth NJ
SWING-AWAY—Electrical Mfg Co
SWING-EASY—Anderson (Albert & JM) Mfg Co
Swing-O-Lite Inc 13 Moonachie Rd Hackensack NJ
SWING TOP—Electrical Fittings Corp
SWING-WA—General Electric Co
Swiss Jewel Co 225 Lafayette Bldg Phila 6 Pa
SWITCH-KING—Cable Electric Products Inc
SWITCH MAT—Recora Co Inc
SWITCH-O-LITE—Hoffman Engineering Corp
SWITCHETTE—General Electric Co
SWITCHMATIC—Eagle Electric Mfg Co Inc
SWITCHPAK—Licon Switch & Control Div
SWITCHSTAT—Penn Controls Inc
Swivelier Co Inc Nanuet NY
SWIVELITE—Amplex Corp
SYL-OHM—Ward Leonard Electric Co
SYLGARD—Dow Corning Corp
SYLYRD—Dow Corning Corp
SYLVALDY—Driver (Wilbur B) Co
Sylvania Electric Products Inc 730 Third Ave New York 19 NY
SYMMETRIC—Wakfield Lighting Div
SYNALITE—Mitchell Lighting Div
SYNCHRON—Hansen Mfg Co Inc
SYNCHROSTAT—Electric Machinery Mfg Co
SYNCRAMENTAL—Leder Inc
SYNCRO-BREAK—Square D Co
SYNCRO-SPEDE—Allis (Louis) Co
SYNCRGEOAR—U S Electrical Motors Inc
SYNCRGRAPH—Allen Electric and Equipment Co
SYNDUCTION—Allis-Chalmers Mfg Co
SYNKOTE—Plastoid Corp
SYNROFLASHING—Blackhawk Industries
SYNRUB—Kaiser Aluminum & Chemical Sales Inc
SYNTHAMICA—Mycalex Corp of America
SYNTHINOL—Rome Cable Div of Alcoa
SYNTHITE—Dolph (John C) Co
SYNTHOL—Crescent Insulated Wire & Cable Co
SYNTHOLVAR—Varflex Corp
Syntron Co 690 Lexington Ave Homer City Pa
System Analyzer Corp 700 W State St Nokomis Ill

T

TA Mfg Corp 4607 Alger St Los Angeles 39 Calif
T & B—Thomas & Betts Co
T-D—Chase-Shawmut Co
TEC—Circle F Mfg Co
TEC—Litelcorp Corp
TK—Tuttle & Kift Inc
T LINE—Times Wire & Cable Div

T-POWER—Motorola Communications & Electronics Inc
TV Wire Products—see Teco Insulated Wire
T-W—Taylor-Winfield Corp
TA POT—Howell Instruments Inc
TAB-WELD—Square D Co
Taco West Corp—see West Instrument Corp
Taitco Div Tait Mfg Co 500 Webster St Dayton 1 Ohio
TAKK—Hewson Co Inc
TAL-BENDER—Hein-Werner Corp
Talk-A-Phone Co 5013 N Kedzie Ave Chicago 25 Ill
TALMASTER—Daimotron Co
TALL REACH—Kett Tool Co
TALLESCE—Up-Right Inc
TAMPIN—Star Expansion
TAN-O-MITE—Ohmite Mfg Co
TAND-O-LITE—House-O-Lite Corp
TANKTROL—Automatic Control Co
TANSOL—Mallory (P W) & Co Inc
TANTALYTIC—General Electric Co
TAN-A-RAY—Penetray Corp
TAP-EEZ—Bryant Electric Co
TAP-IT—U S Expansion Bolt Co
TAP-LITE—Minneapolis-Honeywell Regulator Co
TAP-ON—Tomic Sales & Engineering Co
TAPE CHASER—Chase & Sons Inc
TAPE-MATE—Holub Industries Inc
TAPERDRUM—Art Metal Lighting Div
Tapeswitch Corp of America 229-24 Linden Blvd Cambria Heights 11 NY
TAPIT—Burdry Corp
TARGET—Anchor Packing Co
TASKMASTER—Benjamin Div
TATTELITE—Sittler Corp
TATTELITE-TESTER—Rodale Mfg Co Inc
TAURIL—Anchor Packing Co
Taylor (R W) Electric Co—see Taylor Electric Inc
Taylor Electric Inc 5835 Fischer Rd Howell Mich
Taylor Fibre Co Norristown Pa
Taylor-Winfield Corp 1052 Mahoning Ave NW Warren Ohio
TAYLORITE—Taylor Fibre Co
TAYLORON—Taylor Fibre Co
Tec Imports Inc 15001-03 Calif St Van Nuys Calif
Technical Development Corp—see Haydon (A W) Co
Technical Electronics Co—see Haydon (A W) Co
Technical Electronics Corp—see Haydon (A W) Co
TECHNITE—Capewell Mfg Co
Technology Instrument Corp—see Acton Laboratories Inc
Tedar Products Co Box 1209 Union NJ
TEEL—Dayton Electric Mfg Co
TEELON—Benjamin Electric Mfg Co
Tektronix Inc P O Box 500 Beaverton Ore
TEL-A-PIPE—Westline E-Z-Code Div
TEL-ALARM—Industrial Automation Corp
TEL-ALARM—Tigerman Engineering Co
TEL-O-SET—Minneapolis-Honeywell Regulator Co
TELEAPPROACH—American District Telegraph Co
Telcon Inc P O Box 216 Pacific Palisades Calif
Tele-Jac Co 840 N Cummings Rd Covina Calif
TELE STRIP—Dialight Corp
TELEC-CON—Southwestern Plastic Pipe Co
TELECABLE—Whitney Blake Co
TELECATOR—Automatic Control Co
TELECOM—Webster Electric Co
TELECORD—Whitney Blake Co
TELEORDER—Automatic Control Co
TELEDUCT—Whitney Blake Co
TELEFRAME—Whitney Blake Co
TELEGROUND—Whitney Blake Co
TELEMAND—I-T-E Circuit Breaker Co
TELEPRENE—Whitney Blake Co
TELESCAN—Automatic Control Co
TELESCOPER—Economy Engineering Co
TELESCOPIK—Kulka Electric Corp
TELESEAL—Whitney Blake Co
TELESIDE—Drake Mfg Co
TELESTEP—Automatic Control Co
TELETALK—Webster Electric Co
TELETHERM—American District Telegraph Co
TELETROF—Howard Electric Co
TELETROL—Automatic Control Co
TELEVOLT—Sola Electric Co
Telex/Aemco 10 State St Mankato Minn
Telex/Lumen Inc P O Box 905 Joliet Ill
Telsta Corp 1700 Industrial Rd San Carlos Calif
TEMCO—Electrical Mfg Co
TEMCO—Thermolyne Corp
TEMCOMETER—Thermolyne Corp
TEMPLEX—Minnesota Mining & Mfg Co Irvington Div
TEMP-O-LARM—Kiddie Ultrasonic & Detection Alarms Div
TEMP-R-TAPE—Connecticut Hard Rubber Co
TEMP-TERMS—ETC Inc
TEMPA-TUBE—Acra Electric Corp
TEMPALL—Tobe Deutschmann Corp
TEMPBRAID—Hitemp Wires Co
TEMPCLAD—Hitemp Wires Co
Templeton Kenly & Co Gardner Rd Broadview Ill
TEMPOTHERM—General Controls Co
TEMPRENE—Hitemp Wires Co
TEMPREX—Hitemp Wires Co
TEMPRITE—Hitemp Wires Co
TEMPTUBE—Hitemp Wires Co
TENER—Mole-Richardson Co
TENNA-ROTOR—Alliance Mfg Co Inc
TENNA-SHINGLE—Javex Electronics
TENNA-TUBE—Javex Electronics
Tennessee Plastics Inc Box 3117 Carroll Reece Branch Johnson City Tenn
TENS-A-MATIC—Murray Equipment Co Inc
TENSILOK—General Cable Co
TENSITE—Driver (Wilbur B) Co
TENSIOLEX—Tensolite Insulated Wire Co Inc
Tensolite Insulated Wire Co Inc West Main St Tarrytown NY
TENSOLON—Tensolite Insulated Wire Co Inc

TENX—General Electric Co Wire & Cable Co Inc
Terado Corp 1068 Raymond Ave St Paul 8 Minn
TERAGLAS—Natar Corp
TERMINAL BLOCKS—Wama Co
TERMITE—Relton Corp
Termite Drills Inc—see Relton Corp
TERRA-TRAN—R T & E Corp
TESCO—Eastern Specialty Co
TEST-MASTER—Amprobe Instrument Corp
TESTO LITES—Brach Mfg Co
TESTONIC—Blue M Electric Co
TETCO—Electric Tachometer Corp
Teco Insulated Wire 108 E Prospect Ave Burbank Calif
Texas Croosoting Co P O Box 131 Orange Tex
TEXSLIDE—Allis-Chalmers Mfg Co
TEXSUN—Gar Wood Industries Inc
TEXTUR-CEL—Neo-Ray Products Inc
Tey Mfg Co—see United States Air Conditioning Corp
Thatcher Glass Co—see McKee Div
Thieler (H J) Corp Ashmont Ave Whitinsville Mass
Thiepit Mfg Co Gregg & Hammond Sls Carnegie Pa
Ther Electric & Machine Works 17 S Jefferson St Chicago 6 Ill
THER-MONIC—Induction Heating Corp
THERM-O-METER—Simpson Electric Co
THERM-O-TRON—Trindl Products Ltd
THERMA-MARK—North Shore Nameplate Div
Thermador Electrical Mfg Co 5119 District Blvd Los Angeles 22 Calif
THERMAL-AIRE—Garden City Fan & Blower Co
Thermal-Aire Inc—see Thermal-Aire of America Inc
Thermal-Aire of America Inc 10 State Street (Room 905) Boston Mass
Thermal American Fused Quartz Co Rt 202 & Change Bridge Rd Montville NJ
Thermal Engineering & Design Co 217 Ash St Akron 8 Ohio
Thermal Syndicate Ltd—see Thermal American Fused Quartz Co
THERMALEZE—Phelps Dodge Copper Products Corp
THERMALINE—General Electric Co Major Appliance Div
THERMALL—LaRose (WT) & Associates Inc
THERMALOAD—Monitor Controller Div Altec Corp
THERMALON—Hitemp Wires Co
THERMASTER—Willard Sales
THERMATROL—Matfield Wire & Cable Div
THERMAZIP—Zippertubing Co
THERMISTEMP—Yellow Springs Instrument Co Inc
Thermo Electric Mfg Co—see Thermolyne Corp
THERMO-GRIP—Ideal Industries Inc
THERMO-TECTOR—General Electric Co
THERMO-TIP—Ideal Industries Inc
THERMO-TRIEX—Triangle Conduit & Cable Co Inc
THERMOLAIN—Star Porcelain Div
THERMOLUX—Lumen Lighting Products Inc
Thermolyne Corp 513 Huff St Dubuque Iowa
Thermon Mfg Co 1017 Rosine St Houston Tex
THERMOPILOT—General Control Co
THERMOPLEX—Cutler-Hammer Inc
THERMOPRENE—Whitney Blake Co
THERMOSWITCH—Fenwal Inc
THERMOSWITCH—Mechanical Products Inc
THERMOWELD—Burdry Corp
THETA—Trombetta Solenoid Corp
Thiel Tool & Engineering Co 1417 N Market St St Louis 6 Mo
THIMBLEVE—Chance (A B) Co
THINCELL—Sinko Mfg & Tool Co
THINETTE—General Electric Co Major Appliance Div
THINFLEX—Mystik Adhesive Products Inc
THINLINE—General Electric Co Major Appliance Div
Room Air Conditioner Dept
THINPLATE—Park Nameplate Co Inc
THIRTY—Gould-National Batteries Inc
THIRTY-TEN—Gould-National Batteries Inc
Thomas Associates—see TA Mfg Corp
Thomas & Betts Co 36 Butler St Elizabeth 1 NJ
THOMAS A EDISON—McGraw-Edison Co
Thomas Instrument Co Box 41 Liverpool Rd Phoenix NY
Thomas (R) & Sons Co—see Delta-Star Electric Div
HK Porter Co Inc
Thompson Electric Co P O Box 873 Cleveland 22 Ohio
Thompson (Henry G) & Son Co 277 Chapel St New Haven 5 Conn
Thompson Mfg Co 611 Stevens St Geneva Ill
Thor Power Tool Co 175 N State St Aurora Ill
THOREX—Ohio Brass Co
THORO-FLARE—Emarco Corp
THRED-O-MATIC—Collins Machinery Corp
THREE "E"—Electrical Engineers Equipment Co
THREE "G"—Gruber Bros Inc
THREE-U-LITE—Northern Incandescent Lamp Co
THRIFTY—Marathon Battery Co
THRIFTY-CALL—Simpson (Mark) Mfg Co Inc
THUNDER-TWIST—New England Carbide Tool Co Inc
THYMOTROL—General Electric Co
TI-CO—Thomas Instrument Co
TI-MITE—Paragon Electric Co
TIARA—Day-Brite Lighting Inc
TIFFIN—Quincy Mfg Co
TIGER BRAND—American Steel & Wire Div United States Steel Corp
Tigerman Engineering Co 4332 N Western Ave Chicago 18 Ill
Tilden Tool Mfg Co Inc 209 Los Molinos San Clemente Calif
TILECOTE—Wilbur & Williams Co Inc
TIME-A-TROL—Acro Switch Div
TIME-ALL—International Register Co
TIME-MINDER—International Register Co
TIME-O-STAT—Minneapolis-Honeywell Regulator Co
TIME SAVER—Equipment Corp of America

TIMEMASTER—Willard Sales
Times Appliance Co Wire & Cable Div—see Times Wire & Cable Div
Times Wire & Cable Div International Silver Co Wallingford Conn
TIN-EZY—Johnson Mfg Co Inc
TINOL—American Solder & Flux Co
TINY-GLOW—Industrial Devices Inc
TINYLITES—Drake Mfg Co
TIP-TOP—General Cable Co
TIP TOP—Relton Corp
TIPIT—Shaw-Box Crane & Hoist Div Manning Maxwell & Moore Inc
TIPLETS—Ungar Electric Tools
TIREX—Simplex Wire & Cable Co
TITAN—Detroit Hoist & Machine Co
Titchener (E H) & Co 67 Clinton St Binghamton NY
TITE-BEND—Thomas & Betts Co
TITE-BITE—Thomas & Betts Co
TITELBILT—Phelps Dodge Copper Products Corp
TITELITE—Drake Mfg Co
Tobé Deutschmann Corp Providence Highway Norwood Mass
Tocco Div Ohio Crankshaft Co 3800 Harvard Ave Cleveland 5 Ohio
TOCCOTROL—Tocco Div
TOCCOTRON—Tocco Div
TOD-Lite Inc 3401 N W 10 St Oklahoma City Okla
TOD-L-SNAP—I-T-E Circuit Breaker Co
Toledo-Beaver Tools Inc P O Box 1678 Toledo 3 Ohio
Toledo Commutator Co 1101 S Chestnut St Owosso Mich
Toledo Pipe Threading Machine Co—see Toledo-Beaver Tools Inc
Toledo Standard Commutator Co—see Toledo Commutator Co
Tolen (William) & Son Inc 4041 Ridge Ave Philadelphia Pa
Tomic Sales & Engineering Co 20000 Sherwood Ave Detroit 34 Mich
TONEPAK—Lee Electric Inc
TONG-TEST—Columbia Electric Mfg Co
TONOTRON—Hughes Aircraft Co
TONRAC—American-Standard
TOOLUG—Burndy Corp
TOOTS-E—Lovsted (C M) & Co Inc
Topflight Corp 160 E 9th Ave York Pa
Topflight Tape Co—see Topflight Corp
Topflight Tool Co—see Topflight Corp
TOPBESTOS—Driver (Wilbur B) Co
TOPHET—Driver (Wilbur B) Co
TOPLITE—Swivelier Co Inc
TOPNOTCH—Day-Brite Lighting Inc
TOPPER—Hubbell (Harvey) Inc
TORCH-O-MATIC—Mine Safety Appliances Co
Tork Clock Co—see Tork Time Controls Inc
TORK-MASTER—General Control Corp
Tork Time Controls Inc 1000 Grove St Mt Vernon NY
TORKMASTER—Tork Time Controls Inc
TORKOL—Line Material Industries
TORNADO—Breuer Electric Mfg Co
TORO 600—Belden Mfg Co
TORPEDO—Swivelier Co Inc
TORQUE LIFT—Atlas Overhead Door Co
TORQUETROL—Electronic Control Corp
Torrington Co 59 Field St Torrington Conn
TORRIVENT—Trane Co
TOTA REEL—Hykon Mfg Co
TOTALUME—Wilbur & Williams Co
TOTRUST—Wilbur & Williams Co
TOUCH-A-MATIC—Eagle Electric Mfg Co Inc
Touch-Plate Mfg Corp Box 1970 Long Beach Calif
TOUCHETTE—Rodalie Mfg Co Inc
Tower Craftmen Inc 105 Chestnut St Red Bank NJ
Tower Mfg Corp 158 Pine St Providence 3 RI
TOWN & HIGHWAY—Westinghouse Electric Corp
TOYLIGHT—Aerolux Light Corp
TRA-BAK—Great Northern Mfg Corp
TRAC-O-LITE—Comet Lamp Co
TRACE—Miller Co
TRACTIONEER—F W D Corp
Trade Service Publications Inc 341 E Ohio St Chicago 11 Ill
Trade-Wind Div Robbins & Myers Inc 7755 Paramount Pl Pico Rivera Calif
Trade-Wind Motorfans Inc—see Trade-Wind Division Robbins & Myers Inc
TRADELITER—Duro-Test Corp
TRAFFLEX—Crouse-Hinds Co
Trane Co 2nd & Cameron Ave La Crosse Wis
TRANFO-UNIT—I-T-E Circuit Breaker Co
TRANOLSEAL—Johns-Manville
TRANQUILITE—Day-Brite Lighting Inc
TRANS-ALARM—Tigerman Engineering Co
TRANS-O-MATIC—Lake Shore Electric Corp
TRANSACTOR—Stromberg Div General Time Corp
TRANSO—Coil Co of America Inc
TRANSFLEX—Minnesota Mining & Mfg Co
TRANSI-MAG—Magnetic Amplifiers Div
TRANSISTA FLASH—U-C Lite Mfg Co
TRANSITE—Johns-Manville
TRANSILUX—Luxor Lighting Products Inc
Transolite Corp 515 Madison Ave New York 36 NY
TRANSPORTER—AUTOMATIC Div of Yale & Towne Mfg Co
TRANSRACK—Sangamo Electric Co
TRANSLIDER—AUTOMATIC Div of Yale & Towne Mfg Co
TRANSTACKER—AUTOMATIC Div of Yale & Towne Mfg Co
TRANSTRACOR—AUTOMATIC Div of Yale & Towne Mfg Co
TRANSVERTER—Kearfott Div General Precision Inc

TRANSVEYOR—AUTOMATIC Div of Yale & Towne Mfg Co
TRAP-DRI—Controls Co of America
TRAPIT—Controls Co of America
TREADLITE—Linemaster Switch Corp
TRENCHLAY—General Cable Corp
Trent (Harold E) Co—see Trent Inc
Trent Inc 201-299 Leverington Ave Phila 27 Pa
TRI-AMP—General Instrument Rectifier Div
TRI-AMP—Radio Receptor Co Inc
TRI-CLAD—General Electric Co
TRI-FLUX—Redmond Co Inc
TRI-LITE—Artistic Lamp Mfg Co Inc
TRI-ONIC—Chase-Shawmut Co
TRI-PAK—Perfection Div
Tri-Part Mfg Co 359 S Jessie St (P O Box 178) Pontiac Mich
TRI-PHASE—Taylor-Winfield Corp
TRI-TAPER—Petelco Inc
TRI-WAY—U S Expansion Bolt Co
TRIADRY—Triangle Conduit & Cable Co Inc
Triangle Conduit & Cable Co Inc Triangle & Jersey Aves New Brunswick NJ
Triangle Equipment Co Inc 45 River Rd Nutley 10 NJ
Triangle Instruments Co—see Epco Electronics Inc
Triboro Electric Corp 110 Waterberry Brooklyn 6 NY
Trico Fuse Mfg Co 2948 No 5th St Milwaukee 12 Wis
TRICO-MIST—Trico Fuse Mfg Co
TRICON—Triangle Conduit & Cable Co Inc
TRIOX—Triangle Conduit & Cable Co Inc
TRIFORMANCE—Triangle Conduit & Cable Co Inc
TRIG—Rustan Corp
TRIG-R-HEAT—Wall (P) Mfg Co
TRIG TOWERS—Rustan Corp
TRIMLINE—Rome Cable Div of Alcoa
Trimount Instrument Co—see Trimount Instrument Div General Controls Co
Trimount Instrument Div General Controls Co 2000 S Wolf Rd Des Plaines Ill
Trindl Products Ltd 1807-11 S Clark St Chicago 16 Ill
Trine Mfg Corp 1430 Ferris Place New York 61 NY
Trio Laboratories Inc Dupont St Plainview NY
TRIOLINE—Triangle Conduit & Cable Co Inc
TRIOLINE—Triangle Conduit & Cable Co Inc
TRIONET—Chase-Shawmut Co
TRIONODE—Walkirt Co
TRIOPRENE—Triangle Conduit & Cable Co Inc
TRIOSEAL—Triangle Conduit & Cable Co Inc
TRIOZONE—Triangle Conduit & Cable Co Inc
TRIP-O-LINK—Kearney (James R) Corp
TRIP-OUT—Kearney (James R) Corp
TRIP-SAVER—Kearney (James R) Corp
TRIP-X-TAP—Dossert Mfg Corp
TRIPLE-A—Quigley Co Inc
Triple-A Specialty Co 2835 N Western Ave Chicago 18 Ill
Triplet Electrical Instrument Co 286 Harmon Rd Bluffton Ohio
TRIPLEYE—Chance (A B) Co
TRIPLOC—Pyle-National Co
TRIPLOC—Nemco Electric Co
TRIPOLI—Swivelier Co Inc
TRIPOMATIC—Kearney (James R) Corp
Tripp Mfg Co 133 N Jefferson St Chicago 6 Ill
TRIPRUF—Triangle Conduit & Cable Co Inc
TRISTEEL—Triangle Conduit & Cable Co Inc
Triton Mfg Co Inc East Haddam Conn
TROJAN—Hexacon Electric Co
Trojan Lighting Co 663 State St San Diego Calif
TROL-E-DUCT—I-T-E Circuit Breaker Co
Trol-E-Duct Electric Products Div
Trombetta Solenoid Corp 329 N Milwaukee St Milwaukee 2 Wis
TROMBOLITE—Amplex Corp
TRON—Bussmann Mfg Div
TROPIC-GLO—Knapp-Monarch Co
TROPIC-AIRE—McGraw-Edison Co Albion Div
TROUBLE SAVER—Patent Scaffolding Co Inc
TRU-ROL—Rollway Bearing Co Inc
TRU-SET—Ramset Fastening System
TRU-START—Holub Industries Inc
TRU-TORK—Nankervis (Geo L) Co
TRU-WHITE—Duro-Test Corp
TRUC-Power—Perkins Battery Co
Truco Masonry Drilling Div Wheel Trueing Tool Co 3200-3220 W Davison Ave Detroit 38 Mich
TRUCOLITE—Guth (Edwin F) Co
TRUCOTE—All-State Welding Alloys Co Inc
Trumbull Components Dept—see General Electric Co
Trumbull Electric Mfg Co—see General Electric Co
TUBELOX—Patent Scaffolding Co Inc
TUBENDERS—Henderson Electric Co
TUBETROP—P-W Industries Inc
TUBEWELD—Electrical Tubular Products Inc
TUCALL—Edwards Co Inc
TUCKAWAY—Perfection Div
TUFFEX—Everwarm Inc
TUFPLY—Phelps Dodge Copper Products Corp
TUG—Mercury Mfg Co
TUGIT—Shaw-Box Crane & Hoist Div Manning Maxwell & Moore Inc
TULAMP—General Electric Co
TULITO—Meyer Machines Inc
Tulsa Winch Div—see Vickers Inc Tulsa Products Div
TULSAMATIC—Precision Products & Control Inc
TUMB-L-TITE—U S Expansion Bolt Co
TUMBLIN—Star Expansion
TUMS—Hykon Mfg Co
TUNGAR—General Electric Co
TURBO—Brand-Rex Div
TURBO-COMPRESSORS—Spencer Turbine Co

TURBO-JET—Allis-Chalmers Mfg Co
Turbo Machine Co Lansdale Pa
TURBO-RUPTOR—Allis-Chalmers Mfg Co
TURBO-VAC—Kent Co
TURBOLENE—Brand-Rex Div
TURBOLEX—Brand-Rex Div
TURBOTEMP—Brand-Rex Div
TURBOTHERM—Brand-Rex Div
TURBOTRANS—Brand-Rex Div
TURBOTUFFLEX—Brand-Rex Div
TURBOVANE—Westinghouse Electric Corp
TURBOZIP—Ilumitronic Engineering Corp
TURBOZONE—Brand-Rex Div
Turco Products Inc 24600 S Main St Wilmington Calif
TURCO-SOLV—Turco Products Inc
Turkey Creek Mfg Co—see VON Corp
TURN TYTE—Rodalie Mfg Co Inc
TURNDICATOR—General Controls Co
Turner Brass Works 821 Park Ave Sycamore Ill
TURNEX—Woodhead (Daniel) Co
TURNLOK—Pass & Seymour Inc
TURQUOISE—Duro-Test Corp
TURRET—General Electric Co
Tuttle & Kift Inc 1823 N Monitor St Chicago 39 Ill
TWIN—General Electric Co
TWIN-COM—Bogen-Presto Div
TWIN-GRIP—Pollak Luminescent Corp
TWIN-LUG—Blackburn (Jasper) Corp
TWIN-SIX—Burgess Battery Co
TWINDUCT—National Electric Div H K Porter Co
TWINEYE—Chance (A B) Co
TWIST-IN—Tomic Sales & Engineering Co
TWIST-LOC—Universal Metal Hose Co
TWIST-LOCK—Hubbell (Harvey) Inc
TWIST-MOUNT—Pyramid Electric Co
TWIN-PHONE—Bogen-Presto Div
TWIST-RACK—P-W Industries Inc
TWIST-TITE—Hubbell (Harvey) Inc
TWO-SHOT—Kaiser Aluminum & Chemical Sales Inc
TY-RAP—Thomas & Betts Co
TYM-AN-CODER—Cincinnati Time Recorder Co
TYM-AN-DATER—Cincinnati Time Recorder Co
TYNEE-DRY—Pyramid Electric Co
TYNISWITCH—American-Standard Controls Div
Typhoon Air Conditioning Div Hupp Corp 505 Carroll St Brooklyn 15 NY
Typhoon Prop-R-Temp—see Typhoon Air Conditioning Div
TYPOTRON—Hughes Aircraft Co
TYSON—SKF Industries Inc
TYTEX—Exide Industrial Marketing Div
TYTON—U S Expansion Bolt Co

U

U-C-Lite Mfg Co 1050 W Hubbard St Chicago 22 Ill
U-RAD—Wiegand (Edwin L) Co
U-RE-LITE—I-T-E Circuit Breaker Co
UPPCO Inc 900 S Desplains St Chicago 7 Ill
U S E—U S Expansion Bolt Co
USG—United States Graphite Co
UTC—United Transformer Corp
UCILON—Metal & Thermit Corp
UFLEX—Hatfield Wire & Cable Div Continental Copper & Steel Industries Inc
ULA-SNAP—Ulanet (George) Co
Ulanet (George) Co 413-15 Market St Newark 5 NJ
ULTI-MOLD—Royal Electric Corp
ULTRA-DUREX—Duro-Test Corp
ULTRA-FLEXARMS—White (O C) Co
ULTRA-LITE—Revere Electric Mfg Co
ULTRA-LUX—Garcy Lighting Div
ULTRA-TEMP—Blue M Electric Co
Ultra-Violet Products Inc 5114 Walnut Grove Ave San Gabriel Calif
ULTRA-VISION—Minneapolis-Honeywell Regulator Co
ULTRAFLEX—Cutler-Hammer Inc
ULTRASTART—Westinghouse Electric Corp Lamp Div
ULTRATUBE—Plastoid Corp
ULTRAVALVE—General Control Co
ULTRAVERTER—Blonder-Tongue Laboratories Inc
Unadco Mfg Co—see United Mfg Co
UNDARK—United States Radium Corp
Ungar Electric Tools Electronic Div of Eldon Industries Inc 1475 E El Segundo Blvd Hawthorne Calif
UNI-BALLAST—Line Material Industries
UNI-BUS—Cutler-Hammer Inc
UNI-BUS—Electric Machinery Mfg Co
UNI-CAST—Redmond Co Inc
UNI-CLIP—Unistrut Products Co
UNI-CORE—Alpha Metals Inc
UNI-CRIMP—Sherman (H B) Mfg Co
UNI-FORM'D—Zinsco Electrical Products
UNI-FRAME—Day-Brite Lighting Inc
UNI-LARM—Russell & Stoll Co Inc
UNI-PACT—Faraday Inc
UNI-PAK—I-T-E Circuit Breaker Co Walker Div
UNI-POWER—I-T-E Circuit Breaker Co Walker Div
UNI-TOG—Kirkwood Commutator Corp
UNIBRAKES—Master Electric Div
UNICHROME—Metal & Thermit Corp
UNICLAD—G & W Electric Specialty Co
UNICLOSED—U S Electrical Motors Inc
UNIFED—Lake Shore Electric Corp
UNIFLEX—Zinsco Electrical Products
UNILAB—Hamden Engineering Corp
UNILET—Appleton Electric Co
UNILINE—Pass & Seymour Inc
UNILITE—Electro Lighting Corp

UNILITE—Nu-Art Lighting & Mfg Co
 UNIMAG—Western Gear Corp
 Unimatic Corp Sherwood Lane Caldwell NJ
 Unimax Switch Div Maxson Electronics Corp Ives Road Wallingford Conn
 UNION—Multi Electric Mfg Inc
 Union Carbide Corp Silicones Div 270 Park Ave New York 17 NY
 Union Carbide Consumer Products Co 270 Park Ave New York 17 NY
 Union Equipment Sales Corp 1539 Superior Ave Cleveland 14 Ohio
 Union Insulating Co Inc Box 351 Parkersburg W Va
 Union Metal Mfg Co 1432 Maple Ave NE Canton 5 Ohio
 UNIPAK—Sprague Electric Co
 UNISEAL—Franklin Electric Co Inc
 UNISEAL—Johns-Manville
 UNISHEAR—Stanley Power Tools Div
 UNISPEED—Stromberg Div General Time Corp
 UNISPLICE—Burdny Corp
 Unistrut Products Co 933 Washington Blvd Chicago 7 Ill
 UNIT BLO—United Blower Co Inc
 UNIT-VERSAL—I-T-E Circuit Breaker Co BullDog Electric Products Div
 UNITAP—Dossert Mfg Corp
 United Blower Co Inc 193 Centre St NY 13 NY
 United Chromium—see Metal & Thermit Corp
 United Cinephone Corp—see Ripley Co Inc
 United Electric Controls Co 85 School St Watertown 72 Mass
 United Electric & Engineering Co 8545 W 64 Pl Arvada Colo
 United Electric Machinery Co—see United Electric & Engineering Co
 United Electric Motor Co 178 Centre St NY 13 NY
 United Enterprises 15735 S Paramount Blvd Paramount Calif
 United Lighting & Ceiling Co 2828 Ford St Oakland 1 Calif
 United Mfg Co 41 Haig St Hamden Conn
 United Mfg Div W L Maxson Corp—see United Mfg Co
 United Pressed Products Co—see UPPCO Inc
 United States Air Conditioning Corp P O Box 360 Delaware Ohio
 United States Air Conditioning Corp Skyworker Div Delaware Ohio
 U S Electric Motor Co Cadiz Ohio
 U S Electrical Motors Inc 200 E Slauson Ave Los Angeles 54 Calif
 United States Electrical Tool Co 3640 Llewellyn St Cincinnati Ohio
 United States Electronics Corp 275 Warren St Lyndhurst NJ
 U S Expansion Bolt Co State St & PRR York Pa
 U S Gauge Div AMETEK Inc Clymer Ave Sellersville Pa
 United States Graphite Co Saginaw Mich
 U S MOTORS—U S Electrical Motors Inc
 United States Motors Corp 102 W Fifth Ave Oshkosh Wis
 U S PEERLESS—United States Rubber Co
 United States Petroleum Co 104 Lakeview Ave Clifton NJ
 United States Radium Corp Hanover Ave Morristown NJ
 U S REVERE—United States Rubber Co
 U S ROYAL—United States Rubber Co
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY
 United States Rubber Co Naugatuck Chemical Div 946 Elm St Naugatuck Conn
 U S Rubber Co Wire & Cable Div—see Kaiser Aluminum
 United Transformer Corp 150 Varick St New York 13 NY
 United Wire & Supply Corp 1497 Elmwood Ave Providence 7 RI
 UNITIZED—Magnatran Inc
 UNITOP—Allis-Chalmers Mfg Co
 UNITRAN—Moloney Electric Co
 UNITRANE—Trane Co
 UNITRIP—Stromberg Div General Time Corp
 UNITROL—Cutler-Hammer Inc
 UNITRON—I-T-E Circuit Breaker Co
 UNITYPE—Superior Interlock Corp
 UNIVERSAL—Chicago Pneumatic Tool Co
 UNIVERSAL—Hofffeld Mfg Co
 UNIVERSAL—Litecraft Mfg Corp
 UNIVERSAL—Mueller Electric Co
 UNIVERSAL—Pittsburgh Reflector Co
 Universal Clay Products Co 1558 First St Sandusky Ohio
 Universal Electric Co 300 E Main St Owosso Mich
 Universal Electric Sales Co—see Universal Welder Corp
 Universal Mfg Corp 29-51 E 6th St Paterson NJ
 Universal Metal Hose Co 2133 S Kedzie Ave Chicago 23 Ill
 Universal Motor Co 438 Universal Dr Oshkosh Wis
 Universal Power Corp—see Universal Welder Corp
 Universal Specialty Co—see Allee Corp
 Universal Welder Corp 3537 Lee Rd Cleveland 20 Ohio
 Universal Winding—see Leeson Co
 Unlimited Design Lighting 1155 S Robertson Blvd Los Angeles 35 Calif
 Up-Right Inc Up-Right Scaffolds Div 1013 Pardee St Berkeley 10 Calif
 UPLIFTER—Revolver Co
 Uptegraft Mfg Co R E P O Box 182 Scottdale Pa
 URBAN LITE—Revere Electric Mfg Co
 Urell Inc Bradford Pa
 USAIRCO—United States Air Conditioning Corp
 USCO Power Equipment Corp 829 N 36th Way Birmingham 4 Ala
 Utah Electronics Corp 1124 E Franklin St Huntington Ind

Utica Div Kelsey-Hayes Co Utica 4 NY
 Utica Drop Forge & Tool Div—see Utica Div
 UTIL-A-TOOL—Templeton Kenly & Co
 UTIL-A-VENT—General Blower Co
 UTILAIRE—Solar Light Mfg Co
 UTILIGON—Diamond Power Specialty Corp
 UTILISCOPE—Diamond Power Specialty Corp
 UTILITE—Steeber Div Pyle-National Co
 Utilities Safety Supply Co Inc Jefferson St & Highway 50 Lee's Summit Mo
 Utilities Service Co Grape & 7th St Allentown Pa
 UTILITY—Arex Co
 Utility Body Co 1530 Wood St Oakland 7 Calif
 Utility Service Co Inc 1620 13th St (P O Box 102) Racine Wis
 Utility Transformer and Equipment Co 702 Lynn Ave Baraboo Wis
 UVILUX—Burton Mfg Co

V

VCU—Guth (Edwin F) Co
 VHS RELAY—Assembly Products Inc
 V-S—Master Electric Div Reliance Electric & Engineering Co
 V V Fitting Co P O Box 1253 Merchantville NJ
 VAC-A-BULB—Rite-O-Lite Co
 VAC-A-TUBE—Rite-O-Lite Co
 VAC-IT—Doyle Vacuum Cleaner Co
 VAC-KING—American Floor Machine Co
 VAC-ON—Hypro Engineering Inc
 VAC-U-SEL—General Electric Co
 VACMOBILE—Pullman Vacuum Cleaner Corp
 Vaco Products Co 317 E Ontario St Chicago 11 Ill
 VACU-BREAK—I-T-E Circuit Breaker Co BullDog Electric Products Div
 VACU-MASTER—Hayes C I Inc
 Vacuum Tube Products Co—see Hughes Aircraft Co
 VACUUMSTAT—Minneapolis-Honeywell Regulator Co
 Valen Mfg Co 6725 Machinery Ave Cleveland 3 Ohio
 VALIMITOR—Square D Co Electric Controller & Mfg Div
 Valley Mfg Co Valley Neb
 Valley Fan Mfg Co Box 206 Fort Valley Ga
 VALU-BUL—Wheelock Signals Inc
 VALV-AMP—General Electric Co
 Van Brunt Electric & Mfg Co Inc 252-254 Van Brunt St Brooklyn 31 N Y
 Van Dyke Div—see AOW Corp
 Van Huffel Products Inc—see Power-Strut Div
 Vanguard Mfg Co 1908 E 66th St Cleveland 3 Ohio
 VANO—Coppus Engineering Corp
 VAP-O-TITE—Ideal Industries Inc
 VAPOR-TEMP—Blue M Electric Co
 VAPORLUX—Luxor Lighting Products Inc
 VAPORMASTER—Crouse-Hinds Co
 VAPORSTAT—Minneapolis-Honeywell Regulator Co
 VAPROTEX—Woodhead (Daniel) Co
 VARBAND—Varflex Corp
 VAREPACK—Electric Products Co
 VAREX—Ohio Brass Co
 VAREFIL—Varflex Corp
 Varflex Corp 508 W Court St Rome NY
 VAREFLO—Varflex Corp
 VARGLAS—Varflex Corp
 VARI-AMP—Allis-Chalmers Mfg Co
 VARI-FEED—Trico Fuse Mfg Co
 VARI-SPEED—Reeves Pulley Div Reliance Electric & Engineering Co
 VARI-SPOT—Curtis Lighting Div
 VARIAC—General Radio Co
 VARIOCELL—Superior Electric Co
 VARIDOT—Simpson Electric Co
 VARIDYNE—U S Electrical Motors Inc
 VARIFORM—Lighting Products Inc
 VARILUX—Major Equipment Co Inc
 VARISTAT—Ward Leonard Electric Co
 VARISYN—Western Gear Corp
 VARITAP—Burdny Corp
 Vario Inc 2201 Walnut St Garland Tex
 VARY-TALLY—Veeder-Root Inc
 VASCO—Mitchell Industries Inc
 VAULTMASTER—Haertel (Walter) Co
 VECTO-RAY—Swan Mfg Co
 Veeder-Root Inc 70 Sargeant St Hartford 2 Conn
 VEEDRUM—Art Metal Lighting Div
 VEGA—Metalcraft Products Co Inc
 Velocity Power Tool Co 201 N Braddock Ave Pittsburgh 8 Pa
 VELOMETER—Illinois Testing Laboratories Inc
 Velotronic 1186 Broadway New York 1 NY
 VELVALUME—Day-Brite Lighting Inc
 Vemaline Products Co 511 Commerce St Franklin Lake NJ
 VENTAIR—Coppus Engineering Corp
 VENTILIER—Active Specialty Corp
 VENTRAY—Husky Products Inc
 VENTRIB—Husky Products Inc
 Ventrola Mfg Co 501 S Chestnut St Owosso Mich
 VENTURA—American-Standard
 VENTURAFIN—American-Standard
 VENTURIFLO—General Control Co
 Verd-A-Ray Corp—see Penetray Corp
 VERIBEST—Snyder (M L) & Son Inc
 VERITELL—West Instrument Corp
 Vermeer Mfg Co Pella Iowa
 VERSA-ACRIMP—Anderson Electric Corp
 VERSA—Versen (Kurt) Co
 VERSA GROOVE—Anderson Electric Corp
 VERSA-MAGNET—Standard Portable Cord Co Inc
 Versa Tool Mfg Co Inc Lake Ave at Fourth St Racine Wis

VERSA TRAILER—United States Motors Corp
 VERSA-TRAN—Minneapolis-Honeywell Regulator Co
 Versabar Corp 14 Whyte St Jersey City NJ
 VERSADRILL—Kor-It Co Inc
 VERSAL—Versen (Kurt) Co
 VERSALINE—Miller Co
 VERSARE—American-Standard
 VERSATER—Versen (Kurt) Co
 VERSATIL—Versen (Kurt) Co
 VERSATOL—General Electric Co Wire & Cable Dept
 VERSATROL—Assembly Products Inc
 VERSATRY—Versen (Kurt) Co
 Versen (Kurt) Co 4 Slocum Ave Englewood NJ
 VERSIKOTE—Carboline Co
 VERSIL—Versen (Kurt) Co
 VERSILIER—Keystone Electric Mfg Co
 VERSITAP—Burdny Corp
 VERSTRUM—Versen (Kurt) Co
 VERTI-LITE—Miller Co
 VERTICON—Art Metal Lighting Div
 VERTIDRUM—Art Metal Co Lighting Div
 VERTOLITE—Line Material Industries
 VI-TITE—Penn-Union Electric Corp
 VIBRAPACK—Mallory (P R) & Co Inc
 Vibrascope Co P O Box 97 Glenford NY
 VIBRATION—Federal Sign & Signal Corp
 VIBROGROUND—Associated Research Inc
 VIBROTEST—Associated Research Inc
 VICI—National Lead Co
 Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo
 Vickers Inc Tulsa Products Div 731 E First St Tulsa 20 Okla
 VICON—Insul-B-Corp
 VICTORAY—Whitaker (Douglas C) Co Inc
 VICTOR—Ludlow Textile Products
 Victor Electric Wire & Cable Corp 618 Main St West Warwick RI
 Victor Instrument Mfg Co Inc 33 W 60 St New York 23 NY
 Victor Insulators Inc—see I-T-E Circuit Breaker Co
 VICTOR JR—Trine Mfg Corp
 Victor Specialties Inc 775 Main St New Rochelle NY
 VICTOR SR—Trine Mfg Corp
 Victor Ventilator Co—see Miami Carey Div
 VIEW PAK—Tevco Insulated Wire
 VIEWLITER—Duro-Test Corp
 VIGILTRON—Automatic Control Co
 VIKING—Forsberg Mfg Co
 VIKING—Mid-States Welder Mfg Co
 Viking Air Products Div—see Viking Div
 Viking Div Lau Blower Co 5601 Walworth Ave Cleveland 2 Ohio
 Viking Instruments Inc East Haddam Conn
 VIMAR—Chicago Decal Co
 Vimco Mfg Co Inc Main St (P O Box 373) Holland NY
 VIMCOLIGHT—Vimco Mfg Co Inc
 VINSOL—Rusgreen Mfg Co
 VINYLGLAS—Suffex Corp
 VINYLUX—Diffuse-Lite Co
 VPOWER—Cornell-Dubilier Electronics
 Virden (John C) Co 5009-6103 Longfellow Ave Cleveland 3 Ohio
 Virginia Metalcrafters Inc Waynesboro Va
 VIS-A-RAY—Duro-Test Corp
 VIS-O-GLOW—Brach Mfg Co
 VIS-O-MATIC—Co-operative Utilities Co Inc
 VISA-VOLT—Advance Transformer Co
 VISAFAME—Mercoir Corp
 VISION-AID—Amplex Corp
 VISIONAIRE—Silvray Lighting Inc
 VISIONAIRE—Sunbeam Lighting Co
 VISITRON—Curtis Lighting Div
 VISORLITE—Jay Lighting Mfg Co Inc
 VISTALITE—Stieber Div Pyle-National Co
 VISTALUME—Litecontrol Corp
 VISUALIER—Garcy Lighting Div
 VISUALITE—Magni Flood Inc
 VISULARM—Crouse-Hinds Co
 VITAC—Glastic Corp
 VITALITE—Adjustable Fixture Co
 VITALOY—Billings & Spencer Co
 VITROSIL—Thermal American Fused Quartz Co
 VITROHM—Ward Leonard Electric Co
 VITROLAIN—Star Porcelain Co
 VITROTEX—Anaconda Wire & Cable Co
 VIZ-AID—Day-Brite Lighting Inc
 VOCATRON—Vocaline Co of America Inc
 Vocaline Co of America Inc Coulter St Old Saybrook Conn
 VOGUE-LITE—Swivelier Co Inc
 Voigt Co 1636 N Carlisle St Phila 21 Pa
 VOKALCALL—Auth Electric Co Inc
 VOLSEAL—Johns-Manville
 Voltarc Tubes Inc 44 Cross St Norwalk Conn
 VOLTBOX—Superior Electric Co
 VOLTEST—Davenport Mfg Div Duncan Electric Co Inc
 VOLTINE—Waveland Electric Co
 VOLTMETER—Pioneer Gen-E-Motor Co
 VON—Hewson Co Inc
 VON Corp 1036-40 Lomb Ave S W (P O Box 3566) Birmingham Ala
 VOYAGER—Swivelier Co Inc
 VOYCALL—Lake Mfg Co
 VU-ALL—Cable Electric Products Inc
 VU-BREAK—General Electric Co
 Vulcan Electric Co 88 Holten St Danvers Mass
 Vulcan Radiator Co 775 Capitol Ave Hartford & Co
 VULCAN TRIMLINE—Vulcan Radiator Co
 VULKENE—General Electric Co
 VYCOR—Corning Glass Works
 VYONA—Corona Mfg Corp

W

W B—Ware Fuse Corp
WGR—Roller (Wm G) Inc
W & T—Wallace & Tiernan Inc
Waage Electric Inc 720 Colfax Ave Kenilworth NJ
Wac Engineering Co—see Wac Line Inc
Wac Line Inc 35 S St Clair St Dayton 2 Ohio
WAC-TAC—Wac Line Inc
Wachs (E H) Co 1525 N Dayton St Chicago 22 Ill
Waco Mfg Co 5250 W 130 St Cleveland 30 Ohio
Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky
WAFFER—Keystone Electric Mfg Co
WAFFERLUM—Litecontrol Corp
WAFFLETEX—Day-Brite Lighting Inc
WAGENSELLER—Acme Mfg & Gasket Co
Wagner Electric Corp 6400 Plymouth Ave St Louis 33 Mo
Wagner Malleable Products Co 222 W Adams St Chicago 6 Ill
Wagner Mfg Co Inc—see Lenco Inc
Wahlund (M Paul) Mechanical Laboratory P O Box 16 Grant Iowa
Wakefield Brass Co—see Wakefield Lighting Div
Wakefield Lighting Div Wakefield Corp 731 S Water St Vermilion Ohio
Walco Electric Co 303 Allen Ave Providence 1 RI
Waldman (John J) Co 477 Atlantic Ave Brooklyn 17 NY
Walker Brothers P O Box 33 Conshohocken Pa
Walker Div—see I-T-E Circuit Breaker Co Walker Div
Walker Electrical Co Inc—see I-T-E Circuit Breaker Co Walker Div
WALKERDUTY—Walker Brothers
WALKERFLEX—Walker Brothers
WALKERLINE—Walker Brothers
WALKERPRENE—Walker Brothers
WALKERSYN—Walker Brothers
WALKERZONE—Walker Brothers
WALKIE-WORKLIFTER—Economy Engineering Co
Walkirt Co 141 W Hazel St Inglewood 3 Calif
Wall (P) Mfg Co P O Box 71 Grove City Pa
WALL FIN—Trane Co
WALL FIT—Fedders Corp
WALL-KLAD—Wall (P) Mfg Co
Wallace & Tiernan Inc 25 Main St Belleville NJ
WALLENS—Art Metal Co
WALLGRIP—Star Expansion
WALLURNLITE—Gruber Bros Inc
WALLY—Holub Industries Inc
Walser Automatic Timer Corp 420 Lexington Ave New York 17 NY
Walton Laboratories Inc 1186 Grove St Irvington 11 NJ
Wama Co Industrial Bldg Baltimore 2 Md
WARCO—Federal-Warco Div
Ward Leonard Electric Co 28 South St Mount Vernon NY
Ware Bros—see Ware Fuse Corp
Ware Fuse Corp 4400 W Lake St Chicago 24 Ill
WAREHOUSE—Yale & Towne Mfg Co
Warner Electric Brake & Clutch Co Beloit Wis
Warren Lamp Co—see Solar Electric Co
Warren Lighting Rod Co 475 Dayton Ave Collingswood 7 NJ
Warrick (Chas F) Co 1964 W Eleven Mile Rd Berkeley Mich
Washington Aluminum Co Inc Knecht Ave Pennsylvania RR Baltimore 29 Md
WASSCO GLO-MELT—American Electrical Heater Co
WATCH DOG—General Electric Co
WATCHMASTER—Carpenter Mfg Co
Water Saver Faucet Co 611 W Adams St Chicago 6 Ill
Waterman Products Co Inc 2445-63 Emerald St Phila 25 Pa
WATERSEAL—Thomas & Betts Co
WATERTITE—Okonite Co
WATERTITE—Woodhead (Daniel) Co
Watlow Electric Mfg Co 1376 Ferguson Ave St Louis 14 Mo
Watterdore Co 19629 West Lake Rd Rocky River 16 Ohio
Waukesha Motor Co Waukesha Wis
Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill
WEATHER-CHRON—Automatic Devices Div
WEATHER DUTY—Westinghouse Electric Corp Lamp Div
WEATHER-FLO—Automatic Devices Div
WEATHER-MAN—Automatic Devices Div
WEATHERBEST—Union Insulating Co Inc
WEATHERLOC—Continental Electric Equipment Co
WEATHERLUX—Luxor Lighting Products Inc
WEATHERMAKER—Carrier Corp
WEATHERMASTER—Carrier Corp
WEATHERMASTER—Stebber Div Pyle-National Co
WEATHERTRON—General Electric Co Air Conditioning Dept Central Air Conditioner
Weaver (J A) Co 2110 Howard St St Louis 6 Mo
Webb Electric Mfg Co 1701 S W Jefferson St Portland 1 Ore
Webster Electric Co 1900 Clark St Racine Wis
WEBSTER SOUND—Webster Electric Co
WEDGE-GRI—Sherman (H B) Mfg Co
WEDGE-ON—Thomas & Betts Co
WEDGE-TITE—Kearney (James R) Corp
WEDGELOCK—Adalet Mfg Co
WEDGE—Insulation Hfns Corp
WEDGTITE—Crouse-Hinds Co
WEED KUTTER—International Electric Fence Co Inc
Weiss & Bihler Merchandise Corp 40 W 20th St New York 11 NY
Weijit Expansion Products Inc 184 Bedford St Stamford Conn

Wej-Lock Mfg Co—see Grip-Tite Mfg Co
Weksler Instruments Corp 195 E Merrick Rd Freeport L I NY
Weksler Thermometer Corp—see Weksler Instruments Corp
Welbilt Corp 57-18 Flushing Ave Maspeth 78 LI NY
Welch Mfg Co—see Raydyn Corp
WELCME-LIGHT—Calumet Plastics Inc
Welcome Meter Co 1540 Olympic Blvd Montebello Calif
WELCOMELIGHT—Trippie Mfg Co
Welcraft Inc 555 N Michigan St Lakeville Ind
Welcraft Products Co Inc—see Welcraft Inc
WELDANPOWER—Lincoln Electric Co
WELDFORGED—Kerrigan Iron Works Co
WELDMASTER—Lewis-Shepard Products Inc
WELDOX—Hardman (H V) Co Inc
WELDPOWER—Raytheon Co
Welduction Corp 19400 W Eight Mile Rd (P O Box 146) Southfield Mich
WELDUCTOR—Welduction Corp
Weller Electric Corp 601 Stone's Crossing Rd Easton Pa
Weller Mfg Co—see Weller Electric Corp
Wellington Machine Co 133 De Wolf St Wellington Ohio
Wellmade Metal Products Co 860 81st Ave Oakland 21 Calif
Wells Mfg Corp 250 Service Rd Three Rivers Mich
WELLSAW—Wells Mfg Corp
WELTRONARCH—Wetronic Co
Wetronic Co 19500 W Eight Mile Rd Detroit 41 Mich
Wetronic Induction Heating Corp—see Welduction Corp
Wen Products Inc 5808 Northwest Highway Chicago 31 Ill
WEPCO—Wheatland Electric Products Co
Werner Co (RD) Inc P O Box 580 Greenville Pa
WESCO—Westinghouse Electric Supply Co
Wesix Electric Heater Co 390 First St San Francisco 5 Calif
West Dodd Lighting Conductor Corp Goshen Ind
West Instrument Corp 4363 W Montrose Ave Chicago 41 Ill
West Wind Corp 1800 Airport Way Seattle 4 Wash
Westchester Brickworks Products Co Inc 1528 Williamsbridge Rd NY 61 NY
Western Electro-Mechanical Co Inc 300 Broadway Oakland 7 Calif
Western Fluorescent Light Co—see Grayco Products
Western Gear Corp Electro Products Div 132 W Colorado St Pasadena 1 Calif
Western Insulated Wire Co 2425 E 30th St Los Angeles 58 Calif
Western Plastics Corp 1515 W Second St Hastings Neb
Western States Equipment Company—see Lightonics
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
Westinghouse Electric Corp Lamp Div Bloomfield NJ
Westinghouse Electric Corp Lighting Div 1216 W 58th St (P O Drawer 5817) Cleveland 1 Ohio
Westinghouse Electric Corp Standard Control Div Beaver Pa
Westinghouse Electric Corp Sturtevant Div Damon St Hyde Park Boston 36 Mass
Westinghouse Electric Supply Co 3 Gateway Center (Box 448) Pittsburgh 30 Pa
Westline E-Z-Code Div Western Lithograph Co 600 E Second St Los Angeles 54 Calif
WESTON—Round (David) & Son Inc
Weston Instrument Div—see Daystrom Inc
WESTRIP—Westwood Cable Corp
WESTROMATIC—Westron Corp
Westron Corp 652 Hudson St NY 14 NY
Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif
WETOIL—Farrelloy Co
WEYCO—Young Electric & Mfg Co Inc
WHALE—Forsberg Mfg Co
WHEAT—Koehler Mfg Co
Wheat Laboratories—see Koehler Mfg Co
Wheatland Electric Products Co 500 Logan St Carnegie Pa
WHEATLANDUCT—Wheatland Electric Products Co
WHEEL-ABOUT—Rich (Phil) Fan Mfg Co Inc
Wheeler Electronic Co 150 E Aurora St Waterbury 20 Conn
Wheeler Insulated Wire Co—see Wheeler Electronic Co
Wheeler Mfg Co Ross Rd Ashtabula Ohio
Wheeler Reflector Co 275 Congress St Boston 10 Mass
Wheelock Signals Inc Branchport Ave Long Branch NJ
WHIRLCLAD—Polymer Corp
Whirlpool Corp Benton Harbor Mich
Whitaker (Douglas C) Co Inc 141 E Glenside Ave Glenside Pa
Whitaker Ref Mfg Co 3704 Jackson St Monroe La
WHITE CLOUD—Solar Light Mfg Co
WHITE GLO—Luxor Lighting Products Inc
White (O C) Sales Co 40 Green St Marblehead Mass
White-Rodgers Co 9797 Reavis Rd St Louis 23 Mo
Whitman & Barnes Div United Drill and Tool Corp 40600 Plymouth Rd Plymouth Mich
Whitney Blake Co 102 Pershing St New Haven 14 Conn
WHIZ—Speedex Mfg Co
WICK-O-LITE—North American Electric Lamp Co
Wide-Lite Corp P O Box 191 Houston 1 Tex
WIDE-SPREAD—Holophane Co Inc
WIDE-VUE—Simpson Electric Co
Wiegand (Edwin L) Co 7637 Thomas Blvd Pittsburgh 9 Pa
Wiegmann (E M) & Co Inc Freeburg Ill
WIFE-SAVER—Simpson (Mark) Mfg Co Inc

WIL-GARD—Wilson Rubber Co
WIL-SON Mfg Co Cloverport Ky
Wilbur & Williams Co Inc 648 Pleasant St Norwood Mass
Wide Drop Forge & Tool Co—see Wilde Tool Co Inc
Wilde Tool Co Inc Hiawatha Kans
Wilder Mfg Co Inc Mechanic St E Erie Railroad Port Jervis NY
Wiley Displays Inc—see Wiley (R & W) Inc
Wiley (R & W) Inc Dearborn & Bridge St Buffalo 7 NY
Wiloff (M J) Co 823 Locust Pittsburgh 19 Pa
Willard Sales Electric Storage Battery Co P O Box 6266 Cleveland 1 Ohio
Willard Storage Battery Co—see Willard Sales
Williams (J H) & Co 400 Vulcan St Buffalo 7 NY
Williams (Hugh B) Mfg Co 8330 Lovett St (P O Box 7815) Dallas Tex
Williams (H E) Products Co 106 S Main St Carthage Mo
Wilmington Fibre Specialty Co New Castle Del
Wilmot Castle Co Box 629 Rochester 2 NY
Wilson (G C) & Co 1035 26th St Huntington W Va
Wilson (J A) Lighting 2001 Peninsula Dr (P O Box 5037) Erie Pa
Wilson (J A) Lighting & Display Inc—see Wilson (J A) Lighting
Wilson Rubber Co 1200 Garfield Ave S W Canton 6 Ohio
Wincharger Corp E Seventh & Division St Sioux City 2 Iowa
WINCO—Wincharger Corp
WIND-ELECTRIC—Hirschman-Pohle Co Inc
WIND-O-VENT—Reed Unit-Fans Inc
Wind-Way Fan & Ventilator Co 531 St Joseph St New Orleans 12 La
WINDMAKER—Rich (Phil) Fan Mfg Co Inc
WINDOW WONDER—Rich (Phil) Fan Mfg Co Inc
WING-DING—Diamond Expansion Bolt Co Inc
Wing (L J) Mfg Co 303 N Stiles St Linden NJ
WING-NUT—Ideal Industries Inc
WINGFOIL—Wing (L J) Mfg Co
WINGJET—Wing (L J) Mfg Co
Winpower Mfg Co Newton Iowa
Winterburn Mfg Co P O Box 386 Putnam Conn
WIRE GLIDE—Electrical Fittings Corp
WIRE-LESS-COM—Simpson (Mark) Mfg Co Inc
WIRE-LUBE—Ideal Industries Inc
WIRE-NUTS—Ideal Industries Inc
WIRE WATT—Ohmite Mfg Co
WIRED HEAT—Wesix Electric Heater Co
WIREDUCT—Wiremold Co
WIRELESSPHONE—Simpson (Mark) Mfg Co Inc
WIRELESS TALK—Simpson (Mark) Mfg Co Inc
WIRELOCK—Phelps Dodge Copper Products Corp
WIREMASTER—Champion DeArment Tool Co
WIREMIKE—Burdy Corp
Wiremold Co Hartford 10 Conn
WIREWA—National Electric Div
Wirt Co—see Continental-Wirt Electronics Corp
WISCAL—Wisconsin Electrical Mfg Co Inc
Wiseco Div Electric Storage Battery Co 1222 18th St Racine Wis
Wisconsin Carbon Corp—see Kirkwood Carbon Corp
Wisconsin Electrical Mfg Co Inc 1825 S 72 St Milwaukee 14 Wis
Wisconsin Storage Battery Co—see Wiseco Div
WISP-AIRE—Electrend Products Corp
Wiss (J) & Sons Co 33 Littleton Ave Newark 7 NJ
WIZARD—General Control Co
Wodack Electric Tool Corp 4627 W Huron St Chicago 44 Ill
WOLMANIZED—Koppers Co Inc
WONDABAR—Virden (John C) Co
WONDER—American Pipe Bending Machine Co Inc
WONDERFLUX—American Silver Co Inc
WONDERLITE—Magni Flood Inc
WOOD BEAM—Neo-Ray Products Inc
Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill
Woodward Machine Co Lighting Div 4833 Elmhurst Detroit 4 Mich
WORK BULL—Massey-Ferguson Industrial Div
Work-O-Lite Co 522 Cortlandt St Belleville 9 NJ
WORKMAN—Ray-O-Vac Co
Workrite Mfg Co 612-620 Colorado Ave Santa Monica Calif
WORKSAVER—Yale & Towne Mfg Co
Worthington Corp Ampere Station East Orange NJ
WRAP AROUND—PLM Products Inc
WRAP-CAP—Ideal Industries Inc
WRAP-IT-HEAT—Acra Electric Corp
Wrap-On Co 341 W Superior St Chicago 10 Ill
WRIGHT CIRCUIT—Square D Co Electric Controller & Mfg Div
Wright Hoist Div American Chain & Cable Co Inc Franklin & Hay Sts York Pa
WYCO—Wyzenbeek & Staff Inc
WYTELINER—Guth (Edwin F) Co
Wyzenbeek & Staff Inc 223 N California Ave Chicago 12 Ill

X

XIT—Iona Ventilator Co Inc
XL—Excel Fuse Co
X-L—Henderson Electric Co

X-PAN—National Lead Co
 X-Ray Reflector Co—see Curtis Lighting Div
 X S WALLGRIP—Star Expansion
 X-SEAL—Allegheny Plastics Inc
 X-TRACT—Trico Fuse Mfg Co
 X-VAR—Fidelity Chemical Products Corp
 XCEL—Xcelite Inc
 Xcelite Inc Thorne Ave at Bank St Orchard Park NY
 XDUCT—National Electric Div H K Porter Co
 XELON—Times Wire & Cable Div
 XTRADUR—Hexacon Electric Co

Y

Y-ER-EAS—Electro Compound Co
 YAK—Mercury Mfg Co
 Yale & Towne Mfg Co 11000 Roosevelt Blvd Philadelphia 15 Pa
 YAGER'S—Benson (Alexander R) Co Inc
 YANK—Mercury Mfg Co
 YARD LITE—Markel Electric Products Inc
 Yardney Electric Corp 40-50 Leonard St New York 13 NY
 Yardney Laboratories Inc—see Yardney Electric Corp
 Yeats Appliance Dolly Sales Co 2124 N 12th St Milwaukee 5 Wis
 YELLOW 77—Ideal Industries Inc

Yellow Springs Instrument Co Inc P O Box 106 Yellow Springs Ohio
 YEW—Yokogawa Electric Works Inc
 Yokogawa Electric Works Inc 40 Worth St New York 13 NY
 YOLOY—Youngstown Sheet & Tube Co
 YORKLITE—Perkins Battery Co
 Yorkville Metal Products Co 627 Greenwich St New York 14 NY
 Young Bros Co 1831 Columbus Rd Cleveland 13 Ohio
 Young Electric & Mfg Co Inc 2134 Curtis Denver 5 Colo
 Young Engine Corp P O Box 532 Canton Ohio
 YOUNG MODERNS—Lightolier Inc
 YOUNGSTOWN—Square D Co Electric Controller & Mfg Div
 Youngstown Sheet and Tube Co P O Box 900 Youngstown 1 Ohio
 YUKON—Perfecite Co

Z

ZAMPA—Weiss & Biheller Merchandise Corp
 Zell-Aire Corp Orrton Ave Reading Pa

Zellers Laboratories Heating Div—see Zell-Aire Co
 ZENITH—Scranton Storage Battery Corp
 Zenith Electric Co 155 W Walton St Chicago 10 Ill
 ZEPHYR—Chester Hoist Div
 Zernickow (O) Co 15 Park Row New York 38 NY
 ZERO START—Phillips Mfg Co Inc
 ZEVA—Roche (Paul C) Co Inc
 ZILLOY—New Jersey Zinc Co
 ZINC-SHIELD—Wilbur & Williams Co
 Zinsco Electrical Products 729 Turner Los Angeles 12 Calif
 Zinzeye Co—see Zinsco Electrical Products
 ZIP-CLAMP—Hall (William H) Co
 ZIP-CLEAT—Hall (William H) Co
 ZIP-CLIP—Hall (William H) Co
 ZIP SPOT—Mid-States Welder Mfg Co
 ZIPBOOT—Zippertubing Co
 ZIPCORD—Kaiser Aluminum & Chemical Sales Inc
 ZIPLITE—Kaiser Aluminum & Chemical Sales Inc
 ZIPPDUCT—Zippertubing Co
 ZIPPER-ETTE—Mid-States Welder Mfg Co
 Zippertubing Co 13000 S Broadway Los Angeles 61 Calif
 Zippertubing Mfg Co—see Zippertubing Co
 ZIPSOL—Fidelity Chemical Products Corp
 ZONELECTRIC—General Electric Co Major Appliance Div
 ZONELINE—General Electric Co Major Appliance Div Room Air Conditioner Dept
 ZOREX—Adjustable Fixture Co

PRODUCT SELECTION DATA

Detailed information on electrical products

This section contains data presented by manufacturers of electrical apparatus and supplies, utilization equipment, components, tools and accessories. Descriptions include installation and application data, performance characteristics and specifications.

Bold-face type and the symbol (●) are used in the Product Directory to indicate the location of information on specific equipment in this section.



unlimited choice of louver sizes plus three shielding angles



**WITH UNEXCELLED
LIGHTING PERFORMANCE
FOR TODAY AND ALL
FUTURE HIGH LIGHTING
LEVEL REQUIREMENTS**

LUXURY LIGHTING for FIXTURES, CEILINGS or MODULAR PATTERNS

HIGH EFFICIENCY As over 70% of the panel is open, and the ultra-violet resistant polystyrene has over a 50% transmission factor, the efficiency approximates an exposed lamp.

HIGH MAINTAINED EFFICIENCY As there is minimum area for dust collection, and dirt falls through, eliminating a dust film on the top side, high foot-candle, shadowless illumination is maintained.

REDUCED GLARE The height of the panel and the open cubes of the louver construction allow most light to come through instead of "brighting up" the panel. Accordingly, irritating and fatiguing glare is reduced without sacrificing light.

AIR CIRCULATION The open cubes allow free air circulation, enabling lamps and ballasts to operate cooler, increasing their efficiency and life.

DIMENSIONALLY STABLE The rigid, one piece construction provides a durable, impact resistant panel, impervious to scratching, tearing, washing or marring. American louvers' edges stay straight and are unaffected by temperature and humidity fluctuations. However, they can be cut to any specifications, offering unlimited design and installation flexibility.

SIMPLE, LOW COST MAINTENANCE American Plastic Louvers are destaticized to repel dust. Occasionally, if cleaning is required, simply dip in water and detergent—No wiping necessary.

Underwriters' Laboratories, Inc.

INSPECTED
PLASTIC

NOT TO EXCEED 000 Sq. Ft. ISSUE No. xxx

FIRE HAZARD CLASSIFICATION

(Based on 100 for Untreated Red Oak.)

FLAME SPREAD 130-160

FUEL CONTRIBUTED Over 100

SMOKE DEVELOPED Over 200

AMERICAN LOUVER COMPANY

5308 N. ELSTON AVE. CHICAGO 30, ILL.

To meet more rigid specifications of the building codes, American Louver Co. now brings you a **UNDERWRITERS' LABORATORIES, INC.** label listing the use of American Louvers under conditions shown by their label.

New
45° SHIELDING
2½FT x 5FT SIZE

Louver size: 29-3/4" x 59-3/4"; +0", -1/16"
Cell opening: 9/16" x 9/16" x 9/16" high

55° SHIELDING
2FT x 4FT SIZE

Louver size: 23-11/16" x 47-11/16"; +0", -1/16"
Cell opening: 25/64" x 25/64" x 1/2" high

45° SHIELDING
2FT x 4FT SIZE
CHOICE OF TWO SIZES

Louver size: 23-7/16" x 47-1/2"; +0", -1/16"
Cell opening: 9/16" x 9/16" x 9/16" high

Louver size: 23-3/4" x 47-3/4"; +0, -1/16"
Cell opening: 1/2" x 1/2" x 1/2" high

45° SHIELDING
3FT x 4FT SIZE

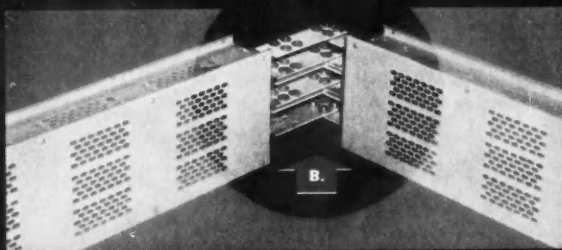
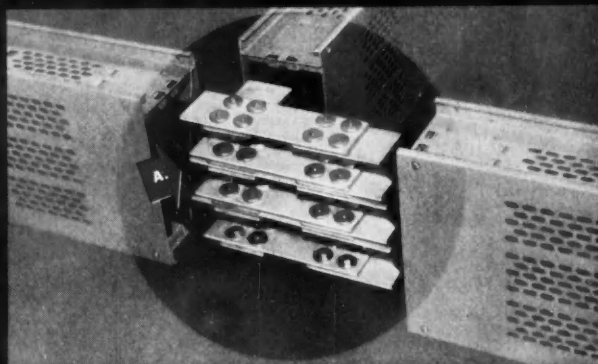
Louver size: 35-5/8" x 47-3/4" x 1/2" high
Cell opening: 1/2" x 1/2" high

Consulting or design
assistance is available
without obligation. Write
for **FREE** sample kit.

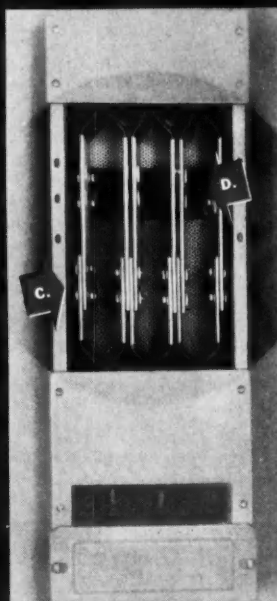
american louver company

5308 NORTH ELSTON AVENUE • CHICAGO 30, ILL.

Eliminate
costly
factory-built
"tees" and
"elbows"



Cut installation
and maintenance
costs



FEDERAL PACIFIC'S NEW LOW IMPEDANCE BUS DUCT features a unique splicing system which permits "tees" and "elbows" to be built up on the job site using standard bus duct sections—thus eliminating costly factory-built fittings. Result: substantially lower initial cost, no delivery delays, greater flexibility and higher salvage value. Splicing system has fewer joints. Result: faster installation and less maintenance. Available in both Feeder and Plug-in types. For complete, detailed information, write for Bulletin 3-125: Federal Pacific Electric Company, General Offices: Dept. 304, Newark 1, New Jersey.

A. "TEE" MADE FROM THREE STANDARD SECTIONS— can be either forward or rearward. Only two splices instead of three on factory-built units.

B. "ELBOW" MADE FROM TWO STANDARD SECTIONS— can be either forward or rearward. Only one splice instead of two on factory-built units.

C. FEWER JOINTS PER BUS BAR— straight lengths require four instead of six joints. On larger duct only seven joints are required instead of twelve.

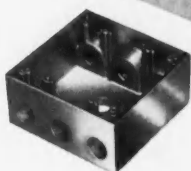
D. PROVISION FOR CURRENT TAKE-OFF DEVICES— A spare set of holes is provided at each splice to accommodate future additions of current take-off devices.



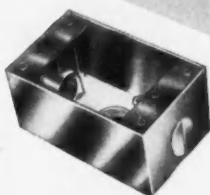
FEDERAL PACIFIC ELECTRIC COMPANY

The Best in Electrical Distribution and Control Equipment

Only **BELL** can supply ALL your needs in **WEATHERPROOF** Wiring Devices



BELL BOXES
Die cast aluminum,
moistureproof
1 and 2-Gang



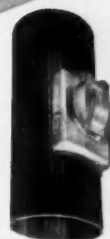
Single Receptacle
SAF-T-LOK
Snap Cover



Weatherproof
Switch, single
and double pole,
3-way, etc.



SAF-T-LOK
Duplex Vertical
Cover Plate with
padlock hasp



SAF-T-LOK
Mini-Plates for
curved or flat
surfaces

Custom devices and oversize covers for all special needs . . . any combination up to 10 gangs

SOLID BRASS PLATE

with

Saf-T-Lok[®] COVER

snaps open

stays open

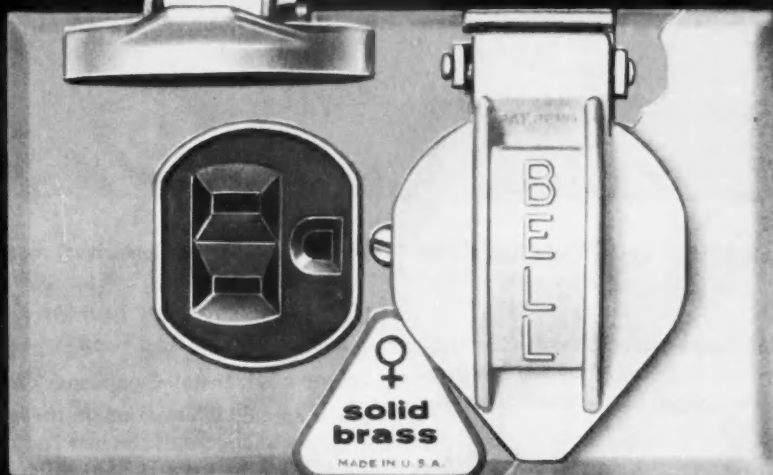
snaps shut

.040
SOLID BRASS

BELL

...better
to buy

...easier
to sell



BAKED
ALUMINUM FINISH

Write for
fully illustrated
catalog



Look for this Label . . . A sign of Quality

BELL ELECTRIC COMPANY 5735 S. CLAREMONT AVENUE, CHICAGO 36, ILLINOIS
America's Most Complete Specification Grade Line

B.F. Goodrich

This

KRALOY RIGID PVC CONDUIT



is now listed under the label service of Underwriters' Laboratories, Inc.
... permitting ABOVE GROUND use *

Already, conduit made of rigid Geon PVC has shown performance superiority in many miles of below ground installations.

Now conduit made of Geon vinyl by Kraloy/Chemtrol, of Santa Ana, California, is included in the National Electrical Code for *above* ground use. Among the many advantages are these:

Corrosion resistance. Users report PVC conduit is their best answer to chemical attack by highly corrosive acids and alkaline fumes and vapors.

Fire resistance. Conduit of rigid PVC will not support combustion.

Unaffected by high humidity. Moisture and water will not penetrate rigid Geon.

Lower cost. Installation is quick and easy.

For specific information on the use and limitations of PVC conduit, consult the new National Electrical Code, *Article 347*, or write B.F. Goodrich Chemical Company, Department AL-5, 3135 Euclid Avenue, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

*Under provisions of revised National Electrical Code, Section 347.

B.F. Goodrich Chemical

a division of The B.F. Goodrich Company

Geon
VINYL



THE RACO PACKAGE

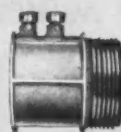
A complete line of
Money-saving boxes and fittings



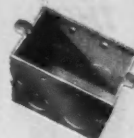
You can rely on Raco's top quality and complete line of fittings and boxes to help you do any wiring job better. Work with Raco fittings and boxes and you will see! Profit from the many user-benefits that make your job easier.

For your fitting and box needs, check Raco first. The Raco Package saves you time on-the-job.

Time Saving Features



Clean cut threads



Burr-free edges



Smooth inner walls



Sharp, clean knockouts



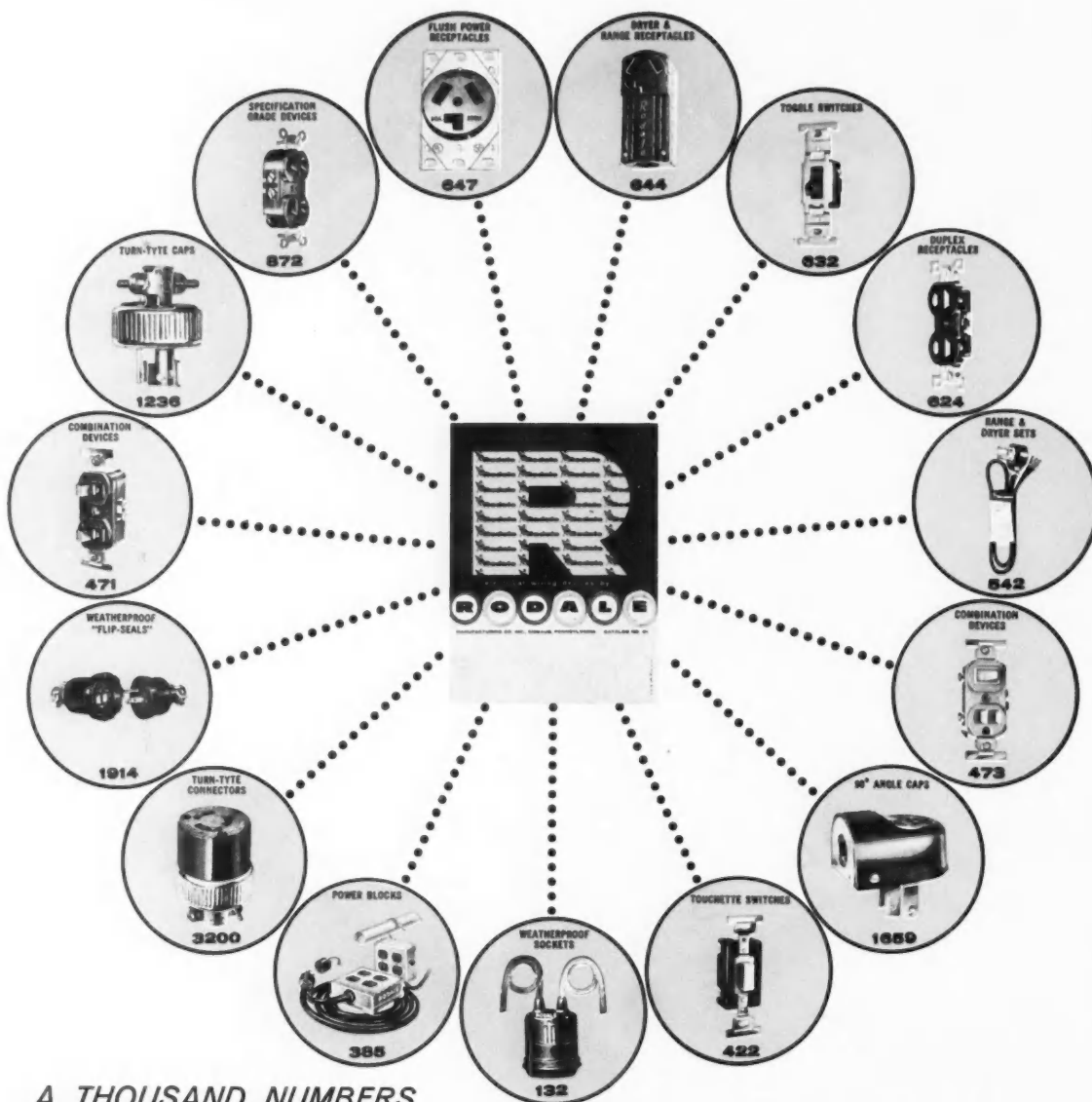
ALL-STEEL EQUIPMENT INC., Aurora, Illinois



FITTINGS



BOXES



A THOUSAND NUMBERS

EVERY ONE A WINNER

Hard working contractors need facts.
Need'em fast, accurate. Here they are.

Rodale WIRING DEVICES are top quality, tested, accepted, **COMPETITIVE**.

Full line of residential switches.
COMPETITIVELY PRICED.

Famous Touchette Switches. We made them first. Ours are the best.

Duplex Receptacles; break-off, double-wipe. **LOWEST COST.** Check it. (Our 624 - 625)

Weatherproof connectors and sockets. **NONE BETTER.** Ours will take the beating. You **PAY LESS.**

Industrial Turn-Tyte Full Line. **REAL VALUE.** Get all the facts for yourself. Want a copy of the new Catalog? Just ask.



Rodale

MANUFACTURING CO. INC. DEPT. D-1, EMMAUS, PA.
Sold only through electrical wholesalers, or for further information and prices, write Rodale direct.

ANDERSON'S TOP TEN TIMESAVERS



1. TYPE 1L "HAMRON" Terminal Lug • Simplest terminal lug yet developed • Cannot over compress • Maintenance free • Eliminates special tools (a hammer and a flat surface is all you need) • Four sizes cover wire range from #6-300 MCM



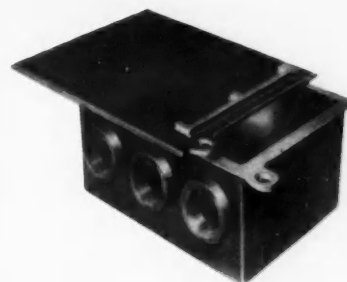
2. TYPE "TS" All Purpose Connector • Great job versatility • Able to join ranges of cable, tubing, flat bus bar and solid rod or any of their combinations to make tee taps, couplers, elbows and parallels • Recommended for emergency stocks • Ruggedly designed for heavy duty service



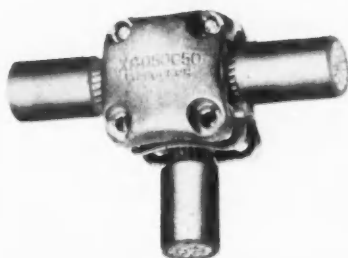
3. "ANDERCRIMPS"* • Complete line of insulated and uninsulated terminals, junctions, splices and disconnects to cover wire ranges from #22 solid through #2 stranded



4. BAR CLAMPS and INSULATORS • Anderson offers a complete line of bar clamps, bus supports and indoor insulators. Bar clamps and supports are available to cover bar widths up to 6"



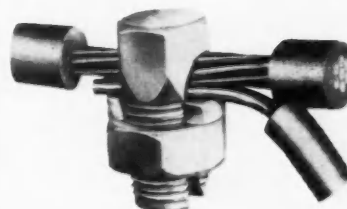
5. CAST ALUMINUM JUNCTION BOXES • Easier to handle and install on the job because of their light weight. Require no maintenance • Faster to drill and tap than the cast iron type



6. TYPE "XP" MULTI-CONNECTOR • For compact tee taps, splices, crosses and parallels • Few sizes cover broad range • Quick to install and easily taped • Ten sizes cover wire range from #6 Str.-1000 MCM



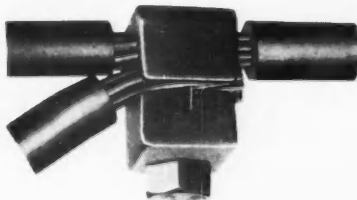
7. TYPE "GC-111" GROUNDING CONNECTOR for WIRE to PIPE or ROD • Two-way groove provides parallel (as shown) or 90° connections. Complete line to cover 1/4" through 4" IPS and #8 Sol. through 800 MCM



8. TYPE "C" SPLIT BOLTS • All components of high strength silicon bronze • High clamping pressure obtained with very smooth chemically treated machine cut threads • All sizes available to cover wire range from 14 Sol. through 1000 MCM



9. TYPE "LU" SET SCREW TERMINAL LUGS • Compact dimensions yet have wide clamping range. High conductivity copper alloy with brass set screw. Available with one- two- or three-cable barrels and with one- two- or four-hole tongues. Also offered with hex head screws • Complete line available to accommodate wire range from 14 solid through 1000 MCM



10. TYPE "DG" VISE ACTION CONNECTOR • One piece design installs without disassembly • No loose pieces to handle. Require no special tools. Round edges facilitate fast taping. DG's come in eight sizes which cover the complete range from #14 Sol. through 4/0 stranded copper

For full information on these products, contact your Anderson representative — or write Anderson Electric Corporation, Leeds, Alabama.



ANDERSON ELECTRIC CORPORATION

* TRADEMARK



CRESCENT



Insulated Wires and Cables

Pictured and described here are just a few of the many wires and cables that are made by CRESCENT.



ABC ARMORED CABLE

Has prefabricated breaking lines which make installing easier, quicker and safer. A flattened bonding wire in contact with the underside of each convolution of the armor assures a permanent low resistance of armor.



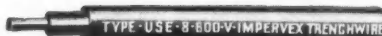
SYNTHOL BUILDING WIRE-TYPE THW

Rated for 75° C operation in both wet and dry locations. Its smaller diameter permits greater carrying capacity for rewiring conduits with overloaded feeders.



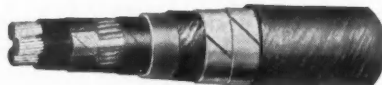
BUILDING WIRE-TYPE RHW

Brad or Neoprene covered
Highest quality insulation, for use in both WET and DRY locations at 75° C.



IMPERVEX TRENCHWIRE-TYPE USE-RR

Single conductors for direct earth burial. Has a heavy Neoprene jacket over the rubber insulation. Provides low cost, permanent underground cable installation.



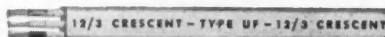
STEEL TAPED PARKWAY CABLE

Designed for direct earth installation without additional protection. All standard types regularly supplied and special type cables made to customers' specifications.



IMPERIAL PORTABLE POWER CABLE

Illustration shows Type SH-D 5000 Volt Trailing Cable for supplying power to electric shovels, dredges, etc. Covered with extremely tough Neoprene jacket.



TYPE UF AND TYPE NMC

Used for direct earth burial as an underground feeder, also used for branch circuit wiring in damp or corrosive locations.



CRESFLEX

Most suitable, lowest cost for rural, residential and farm buildings. Clean, gray paint finish.



SERVICE CABLES-TYPE SE

Both Style A (armored) and Style U (unarmored) are approved by Underwriters' Laboratories as service entrance cable and may be run down the side of a building without additional protection. It is tamper-proof, flexible and lightweight, moisture-resistant and flame-retarding.



NEOPRENE CRESCORD

Heavy duty, oil-proof portable cord, Underwriters' Laboratories Type SO.



HYVOLT SHIELDED POWER CABLE

For use on power circuits from 5 to 15 KV in conduits or for direct burial.



INTERLOCKED ARMOR POWER CABLE

Provides a flexible, metal-enclosed method of wiring for power.



VARNISHED CAMBRIC LEAD ENCASED CABLE

Varnished cambric insulation has high dielectric strength and long life. Not affected by oils and greases. This cable is supplied with lead sheath for wet locations or weatherproof braid for dry locations.

CRESCENT INSULATED WIRE & CABLE CO.

TRENTON, 5, N. J.

"Hard Hats" Prefer T&B Distributors . . .



because they're a local source for over 60,000 Code approved products. T&B products cut installation costs. T&B distributors reduce your operating costs.

Here is an example of a product line that can put dollars into your pocket. All of the products below are listed by Underwriters' Laboratories, Inc., and meet or surpass the requirements of T&B Laboratories and the National Electrical Code, paragraph 373-6 (b). The bright blue nylon liner is a T&B exclusive . . . insulates and protects wire **during** and **after** installation. A flawlessly smooth surface measurably reduces wire pulling effort. The insulated throat is unaffected by moisture, high operating temperatures and common corrosive atmospheres. The result is lowest installed cost and no callbacks.

INSULATED THROAT FITTINGS FOR LIQUID TIGHT FLEXIBLE CONDUIT



1. Liquid Tight for Threaded Outlets
2. Chase® Liquid Tight for JIC Boxes

INSULATED THROAT FITTINGS FOR STANDARD RIGID CONDUIT



1. Threadless Connectors
2. Chase® Nipples
3. Insulated Threadless Elbow

BLUE BUSHINGS FOR RIGID CONDUIT



1. Unbreakable Plastic Bushing
2. Insulated Grounding Bushing
3. Insulated Metallic Bushing

INSULATED THROAT FITTINGS FOR E.M.T. AND FLEXIBLE CONDUIT



1. E.M.T. Raintight Connector
2. E.M.T. Raintight Short Elbow
3. Straight Tite-Bite® for "Flex"

SOLD COAST-TO-COAST THROUGH AUTHORIZED T&B DISTRIBUTORS



THOMAS & BETTS

The Thomas & Betts Co., Incorporated • Elizabeth, New Jersey
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Insulated throat fittings are Patented.

**FROM
EVERY
ANGLE**

RED ● DOT

FITTINGS

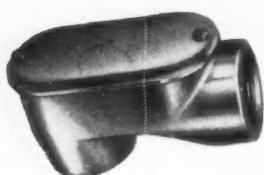
offer

VALUE

QUALITY

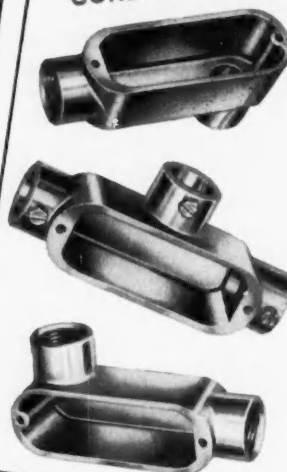
PROFIT

ENTRANCE ELLS

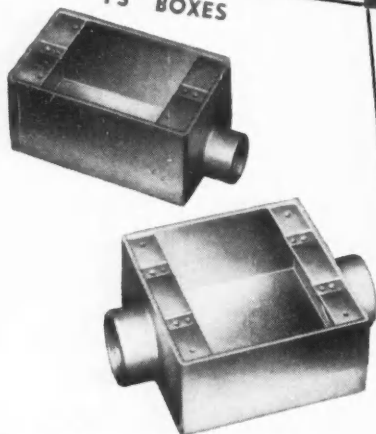


"ELECTRO-SERTS"

CONDUIT BODIES



"FS" BOXES



**WITH
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- Roomy, Unobstructed Interiors
- Flat Backed for Snug Fit
- Outstanding Design
- Satin Smooth, Inside & Out
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The four basic frame sizes of General Electric molded case circuit breakers cover every need from 15 to 1000 amperes.

Not five or more frames, not a variety of sizes up to 22 inches (G.E.'s maximum is 15½ inches). Just four sizes that make your job of circuit breaker selection easy and simple.

This is the line-up:

- E 100 line** — 15 to 100 amperes, 240 and 480 and 600 volts
- F 225 line** — 70 to 225 amperes, 240, 480 and 600 volts
- J 400 line** — 125 to 400 amperes, 240, 480 and 600 volts
- K 1000 line** — 125 to 1000 amperes, 240, 480 and 600 volts

There are no special sizes for special applications either. Hi-Break* models (Up to 75,000 ampere interrupting rating)

and Vu-Break* models (visible contacts) have same frame dimensions.

New F 225 and J 400 lines feature ambient compensation to 50°C without complex derating...plus adjustable magnetic trip with ± 10 percent tolerance at any setting. A full selection of accessories, too.

Easy to select, versatile, compact — all good reasons to standardize on General Electric circuit breakers. Write for bulletin GEA 7410. *Circuit Protective Devices Department, Plainville, Connecticut.* * Trade Mark

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SJ-564



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Write to: General Electric Supply Co.
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Please send me the General Electric Supply Company Estimator, a catalog giving full information and prices on products.

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CITY _____ STATE _____

TOOLS THAT MAKE MORE MONEY!

B-M { THE ORIGINAL INDENTER TOOLS THE ORIGINAL INDENTER FITTINGS

These are the tools and fittings that have revolutionized setting up thin wall conduit. B-M, the Original Indenter Tools have been working efficiently for over 25 years—doing more work easier and lowering installation costs. Now, B-M Indenter Tools have been re-engineered and redesigned to reduce size and weight to increase efficiency and ease of operation. These B-M Indenter Tools with the new patented compound leverage are now only plier size. They are lighter to carry, easier to use and the leverage does the work.

B-M, the Original Indenter Fittings go with B-M Indenter Tools like ham and eggs. Contractors who demand the best always call for the Original B-M Fittings for the soundest, most permanent installations possible. The fittings are concrete tight and vibration resistant. All steel, heavy gauge fittings are heavily bright zinc plated and have been salt spray and acid drip tested for corrosion resistance. Additional features are extra heavy bonding locknuts. Smoothly rounded edges or bushed throat type connectors make fishing easier and prevent damage to insulation.

For fast, safe installation plus complete protection always specify the Original B-M Indenter Fittings and the Original B-M Indenter Tools.

ACTUAL SIZE

**THE NEW
POCKET SIZE TOOLS!**

The rugged, light weight
No. 607 Indenter for
 $\frac{1}{2}$ " fittings is
shown here
full size.



BM-21B
 $\frac{1}{2}$ " Connector
BM-22B
 $\frac{3}{4}$ " Connector
BM-23B
1" Connector



BM-41
 $\frac{1}{2}$ " Coupling
BM-42
 $\frac{3}{4}$ " Coupling
BM-43
1" Coupling



BM-51
 $\frac{1}{2}$ " Offset Connector
BM-52
 $\frac{3}{4}$ " Offset Connector



BM PLIER SIZE INDENTERS
BM—No. 609 1" BM—No. 608 $\frac{3}{4}$ "
BM—No. 607 $\frac{1}{2}$ "

BRIEGEL METHOD TOOL CO.

GALVA, ILLINOIS

All B-M indenter type fittings far exceed the requirements of U. L. file card E 10863 and Federal Specifications W-F-406.

*BM 51 and 52 offsets are not listed as concrete light.

USED THE MOST FROM COAST TO COAST

CIRCLE F WIRING DEVICES



3652*



2531*



2514*



2941*



3301-I*



2515*



3811*



431*



3401*



2632*



584-A*



2577*



854-S*



1515*



3650*



2801-I*



3461-I*



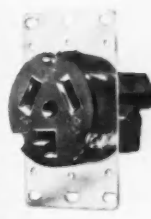
3401-L*



2677*



2532*



3632*



2638*

whatever your **wiring device** needs . . . Circle F has everything you want — and you save money, too! High quality, low cost Circle F wiring devices provide fast, easy installation, trouble-free

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Choose from the leading line-

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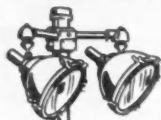
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Specify the Original

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Attractive, rugged lighting poles easily field-fabricated by combining Hope threaded bases with standard conduit or pressure pipe. Four base sizes permit your fixture and elevation selection for a limitless variety of installations. Base hubs tapped deep for strong, locking engagement with threaded pipe. Ample chamber for stubbing conduit, splicing, grounding.



H42200 2"
H42250 2 1/2"
H42300 3"
H42400 4"



Bases also available with weatherproof 3 pole receptacle covers, 110v. or 208v., or both.

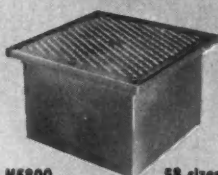


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PRODUCTS CO.**

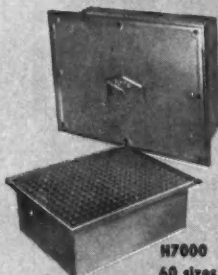
61 Long Ave., Hillside, N.J.
Elizabeth 4-7837

FLUSH MOUNTED NEMA IV WEATHERPROOF



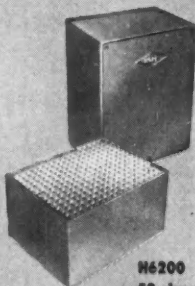
H5800 38 sizes

**SIDEWALK BOX WITH
CHECKERED NON-SKID
COVER**



H7000 60 sizes

**FLANGED RECESSED
COVER BOXES, PLAIN
OR CHECKERED
COVER**



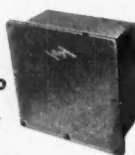
H6200 58 sizes

**INTERNAL FLANGED
WITH PLAIN OR
CHECKERED COVER**

SURFACE MOUNTED NEMA IV WEATHERPROOF

H8000 92 sizes

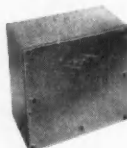
**FLAT FLANGED
COVER WITH
WIDE GASKET**



H2200 134 sizes
**OVERLAP
COVER WITH
RETAINED
GASKET**

H3200 138 sizes

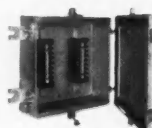
**HINGED COVER,
WITH WING
NUT CLASPS,
RETAINED
GASKET**



H1200 172 sizes
**PLAIN
SCREW COVERS**

H5500 50 sizes

**PIN HINGED
COVER WITH
SINGLE
WING CLASP**



H3200-T 17 sizes
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OR CONTROL**

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H6000 118 sizes

**JUNCTION AND APPARATUS
BOXES FOR HAZARDOUS
VAPOR LOCATIONS**



H6000 S 4 sizes

**SAFETY SWITCHES FOR
HAZARDOUS LOCA-
TIONS, 30, 40, 100, 200
amp. to 600v.**



H4000 W

Twelve window sizes

**SQUARE OR
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FOR METERING,
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For full information on the entire
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Completely illustrated Full dimensional and
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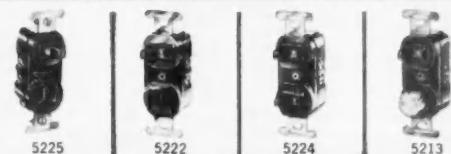
*The most important wiring devices
for any installation*

...from **LEVITON**



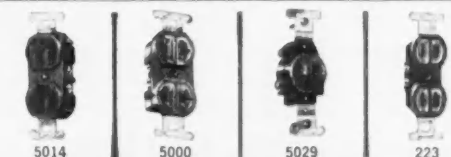
Flush Tumbler Switches. Over 60 cataloged types are available, including 15 and 20 Amp AC Quiet, 10 and 20 Amp T-Rated AC-DC, and 10 Amp residential switches...backed by Leviton's reputation for superior quality at sensible prices.

LEVITON



Combination Line. Over 30 different cataloged combination duplex devices available. Quiet AC Switches combined with Parallel or U-Ground outlets, Pilot Light, or Duplex Switches in separate or common circuits. AC-DC switches in the same combinations.

LEVITON

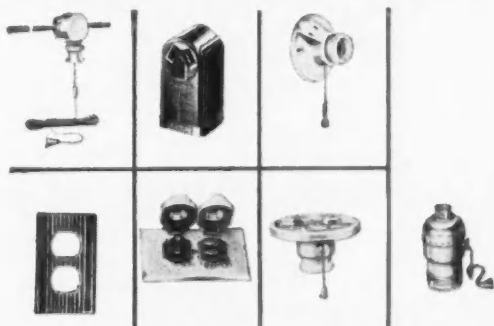


Single and Duplex Receptacles. Over 40 different cataloged types. Single and Duplex U-Ground, T-Slotted, Tandem and Parallel, double contact, back and side wired, and Quickwire for heavy duty and residential uses.

LEVITON



Lev-O-Lock Devices. 2, 3, and 4 wire single and duplex receptacles, connectors, caps, and motor plug outlets. Midget 2 and 3 wire caps and cord connectors. For safety, dependability, economy.



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preferred by linemen
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In safety straps, Klein-Kord was the first specially woven fabric strap designed to permit the use of a tongue-type buckle without risk of slitting or ripping, even under severe strain.

Now Nylon Klein-Kord safety straps are the newest Klein development offering maximum safety with maximum flexibility. These are the only nylon straps designed to meet the tests given in Edison Electric Institute Report AP-2.



Free Tool Guide

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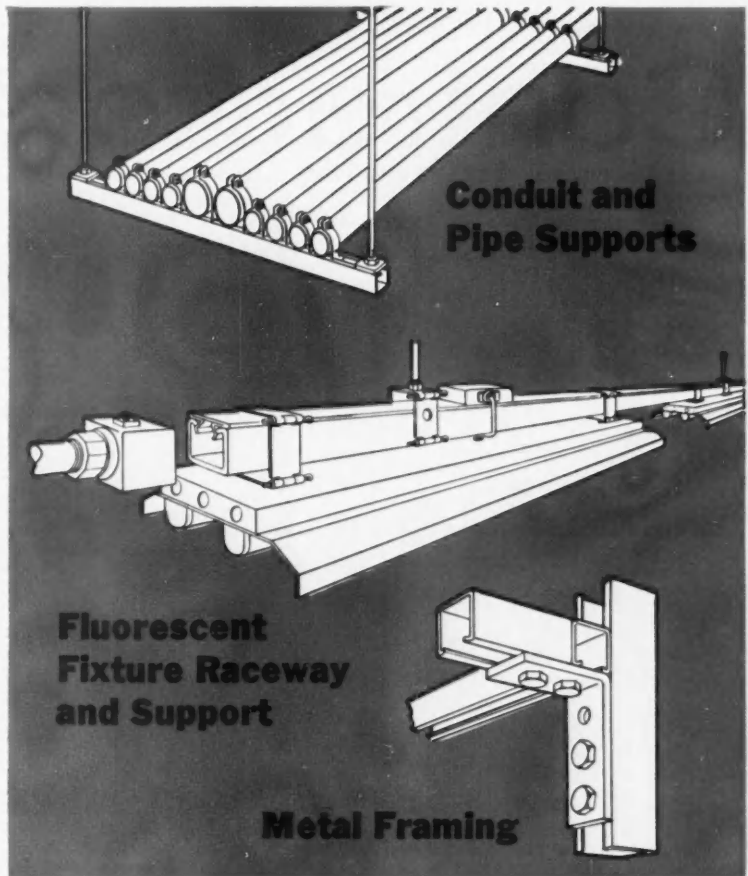
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THE KINDORF METHOD

GALV-KROM FINISH

An electrogalvanized finish

PLUS added protection of zinc chromate



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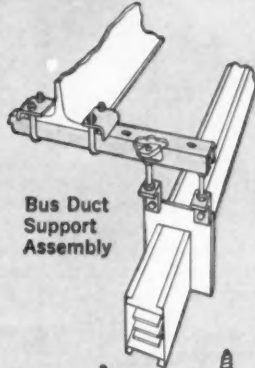
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Fixture Raceway
and Support**

Metal Framing

and accessories too ...



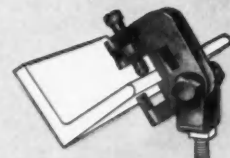
D-255 Concrete Insert



Bus Duct
Support
Assembly



C-149 Series Conduit Hangers



E-232 Clamp with
Swing Connector



C-247 Conduit Clamp



E-243 Wood Beam
Support Flange



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H-195 Steel Rod
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Write for new
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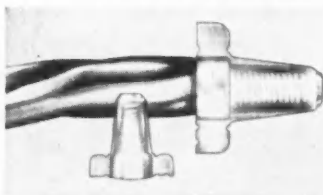
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STEEL CITY ELECTRIC CO. — A CONSTRUCTION MATERIALS DIVISION OF **MARTIN MARIETTA**

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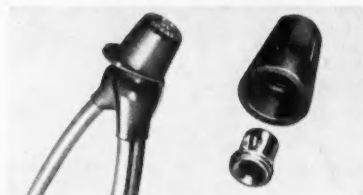
THESE POPULAR IDEAL PRODUCTS ARE ALL AVAILABLE FROM YOUR LOCAL DISTRIBUTOR



Built-in wrench. Unique wings make WING-NUT easiest wire connector to screw on heaviest branch circuit wires. Splice is visible inside tough nylon shell. U.L. listed for 600 volts as pressure cable connector, and 105°C. U.L. approved for aluminum and solid and/or stranded copper wires. 2 sizes of WING-NUT available to meet all pigtail splice needs.



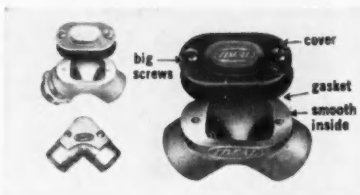
America's favorite! WIRE-NUT has long-proven performance record as lowest-cost method for all common branch circuit and fixture wire connections. Strongest, shake-proof wire joint possible. All 5 sizes U.L. listed as 300v fixture; large sizes 74B & 76B as 600v pressure cable connectors. Use WIRE-NUTS in all types of conduit, cable, non-metallic sheath and open wiring.



Select Set-Screw or Crimp. Only Ideal CRIMP has WRAP-CAP that insulates all around and even between wires. 600v U.L. approved for cadmium plated steel sleeve and vinyl 1-piece WRAP-CAP . . . now 2 sizes. 3 sizes of Ideal SET-SCREWS. All U.L. listed. Shell and connector easily removed and re-used. Tough shell has long skirt to prevent flash-over.



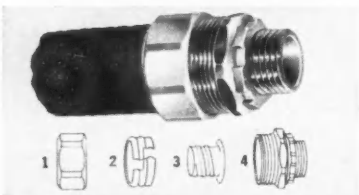
Cut "fishing" time. Highest grade, oil-tempered flat spring steel FISH TAPES will not curl. Flexible and easy for long, multi-bend conduit runs. Steel reel holds tape, is handled with safe, sure grip and ends danger of bending, kinking or breaking tape. Used with flexible leader, solves 90% of fishing problems. 1/8" and 1/4" tapes in 50, 100 and 200 foot coils.



Easiest way around! Ideal PULLING ELBOWS & ADAPTERS make wiring around corners a snap. Precision milled of malleable iron for rugged strength and perfectly smooth pulling. Precise 90° fit. Cadmium plated, chromate treated. Supplied assembled, complete with rigid domed cover, full neoprene gaskets and BIG screws. 1/2" to 2" sizes, in three styles.



Double protection—Ideal VOLTAGE TESTER has a solenoid, calibrated indicator and a neon test lamp . . . each independent of the other. Safest, easiest for rugged daily use. Plastic safety yellow case, no-slip prods, prod storage space, fits pocket. Tests voltage, frequency, AC or DC, continuity, etc. Also model with resistor-fuses in prods to prevent arcing.



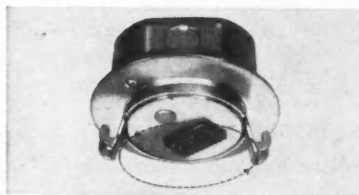
Vap-Oil-Tite—only completely reusable connectors for liquid-tight, flexible metallic conduit. Perfect seal. Positive ground, covers raw conduit end, fits EF and UA. U.L. approved. 90°, 45° and straight for 3/8" to 4" sizes. Easy to apply: Slip ring nut (1), and split ring (2), on conduit. Screw grounding bushing (3) inside conduit. Tighten ring nut over connector (4).



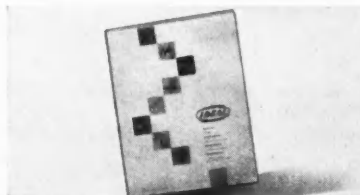
"Yellow 77" is new! Creamy wire pulling compound made with wax base. Works best where pulling is toughest. Exceptionally slippery, stays with wire in long runs. Won't quit half-way thru conduit run. Won't wash off. Always leaves a waxy film for repulling wires later. Safe, clean, harmless to hands and rubber or plastic covered wires or cables.



Strip wires fast and easy. "One-squeeze" STRIPMASTER strips both solid and stranded wire in 2 seconds. Heavy-duty E-Z AUTOMATIC cuts thru toughest insulation and strips wires clean without crushing ends. Low cost T-5 STRIPPER cuts, strips and loops wires. Fits flat in pocket. Strips 10 to 18 gauge. Many other special Ideal hand stripper models available.



Fixture hanger aligns after mounting. Hanger adjusts full 360° after mounting. Eliminates problems of mounting hanger in precise position. Lets you change fixture alignment any time lighting plans require. Wide choice of polarized receptacles. Supplied with chains and cord clips. Vibration-proof safety brackets optional. U.L. approved.



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All the fine maintenance products above are manufactured by IDEAL. All are available from your local IDEAL DISTRIBUTOR.

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YOU'RE
WIRING
FOR

SOUND

BE SURE
IT'S WITH
CORNISH



When you're installing sound and communications systems, radio or TV hook-ups—count on Cornish to furnish the wire and cable you need. At Cornish you'll find complete selections of shielded and unshielded, single and multipair intercom, sound and coaxial cables. They are available in many required conductor sizes, a wide variety of insulations and jackets, made to the tightest specifications. □ See Cornish, too, for the really complete lines of heavy-duty extensions, cord sets, flexible cords and portable Power-Lite lines. Distributors are everywhere—coast to coast. Cornish Wire Company, 50 Church Street, New York 7, New York.



a division of General Cable Corporation



A complete line for every purpose

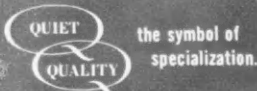
Up to 10,000 KVA, Up to 15,000 volts

TYPICAL APPLICATIONS

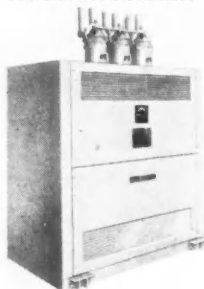
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wall or floor mounting.
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former with tap
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meters.



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500 KVA standard enclosure, temper-
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WITH THE SUPERIOR STEEL NUT (threaded cone section)

FOR YOUR SAFETY

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. . . requires holes of lesser depth, and
shorter length screws.

Distributes strain on wall equally in
all directions . . . lessens danger of
breakage or fracture.



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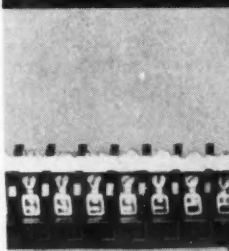
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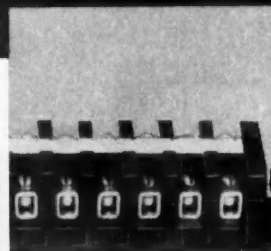
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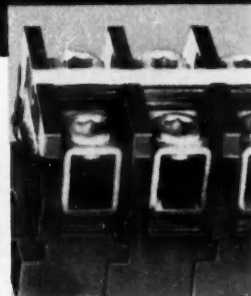
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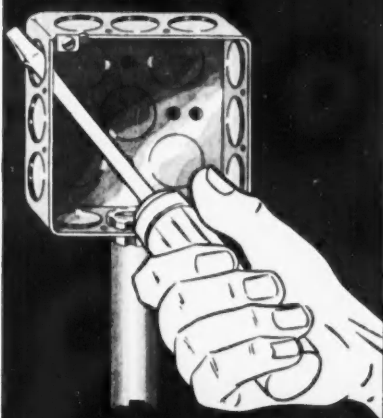
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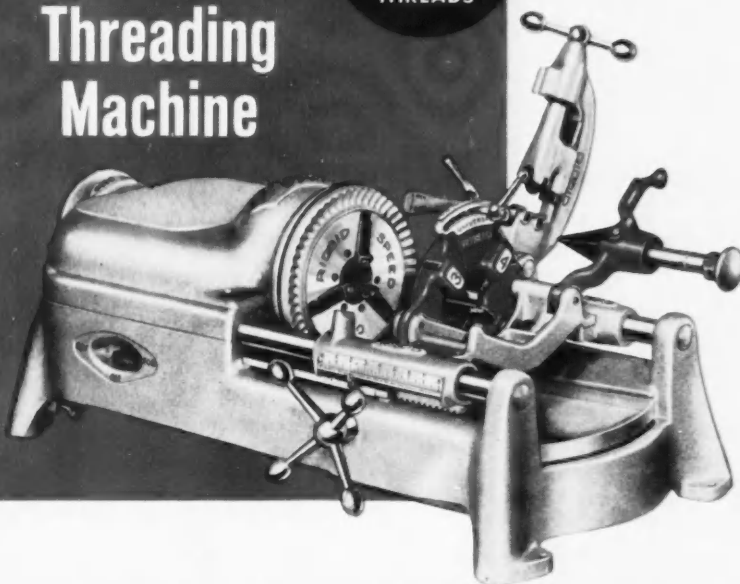
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**Pays for itself
fast...in labor
savings alone!**

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535

Pipe & Bolt Threading Machine



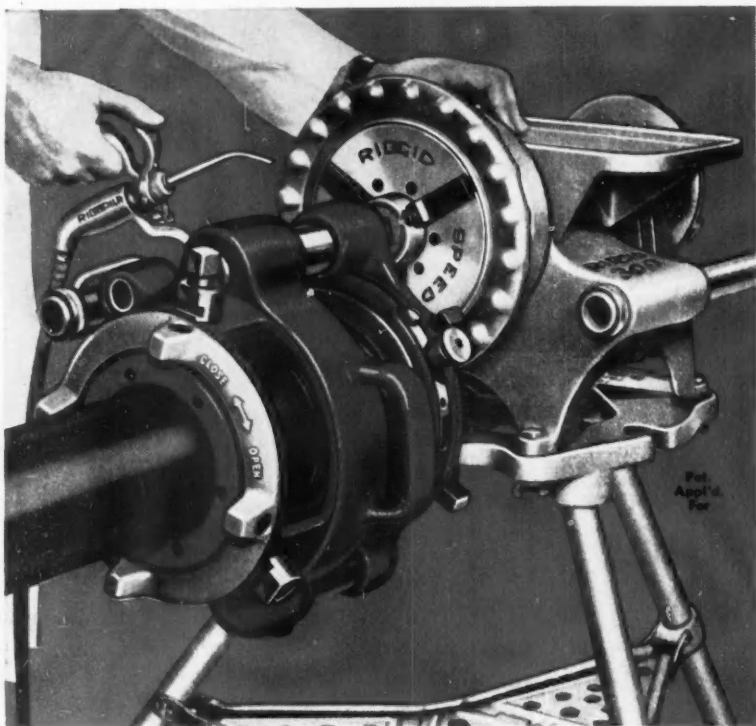
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At Your Finger Tips... For High-Speed
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**See and Try This Time and Cost-Saving RIGID 535
at Your Supply House Today**

RIGID

The Ridge Tool Company, Elyria, Ohio, U.S.A.



...Here's Why **RIDGID**® Geared Threaders Are Easiest To Use

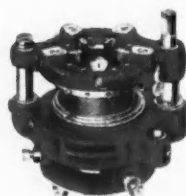
- No die changing . . . One set threads 2½", 3", 3½" and 4" pipe and conduit.
- Fast, simple adjustment for different sizes, straight, tapered, over or under size threads.
- Die head can't jam . . . drive pinion kicks out automatically.
- Cam-type workholder centers work for true threads every time. Easy adjustment for drip threads.
- Close coupled drive method, shown above, eliminates long universal drive . . . inexpensive accessories available at extra cost.



NO. 46 PIPE SUPPORT

Right-angle rollers let pipe turn freely. Height adjusts from 23" to 33".

Call your Distributor today. For your convenience, he maintains a complete stock of **RIDGID** Work-Saver Pipe Tools and parts!



No. 141 . . . for 2½" to 4" pipe and conduit



FOR LARGER SIZES, these easy-to-use features are also available in the **RIDGID** No. 161 Geared Threader for 4", 4½", 5" and 6" pipe and conduit.

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50%

with
Chalfant
CABLE SUPPORT
SYSTEMS



4 Reasons Why...

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1. All splice plates are factory installed . . . ready for the job.
2. No special tools, jigs, fixtures required . . . just crimp to couple, with channel lock pliers.
3. Splice plates are self aligning.
4. No field drilling needed at point of installation.

Install a quick connecting Chalfant splice plate in one minute. No bolts, nuts, washers, pins or special tools are needed with the Chalfant system for supporting power circuits, process tubing, piping and control cables. Tray is supported on top, bottom and side of channel. Reduce your field labor cost . . . boost your profits and maintain your reputation for good, reliable quality and performance with Chalfant quick connecting tray systems available in aluminized steel, galvanized steel, hot dip galvanized steel, and aluminum. Stainless steel on special order.

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Cast of high-strength malleable, these new **RIDGID** Conduit Benders have an exceptionally smooth, typically **RIDGID** quality finish you'll like on sight. Look in

the extra deep sockets, and you'll see the threads down at the bottom. Elimination of strain on threads of pipe handle reduces breakage.

RIDGID Thin-Wall Conduit Benders Available in 3 Sizes

B-1677 Bends $\frac{1}{2}$ " Thin-Wall Conduit to 4" Inside Radius

B-1678 Bends $\frac{3}{4}$ " Thin-Wall and $\frac{1}{2}$ " Heavy-Wall Conduit to 5" Inside Radius

B-1679 Bends 1" Thin-Wall and $\frac{3}{4}$ " Heavy-Wall Conduit to 6 $\frac{1}{2}$ " Inside Radius



Exceptionally smooth side-walls hug conduit snugly . . . minimize distortion. Benders form conduit to meet National Electric Code Standards. Steadying foot pressure is easily applied on non-slip step plate. Easy-to-see arrows give accurate guide for back-to-back and stub bends.

RIDGID Hickey-Type, Heavy-Wall Conduit Benders



B-1711 Bends $\frac{1}{2}$ " and $\frac{3}{4}$ " Heavy-Wall Conduit

B-1712 Bends $\frac{3}{4}$ ", 1" and 1 $\frac{1}{4}$ " Heavy-Wall Conduit

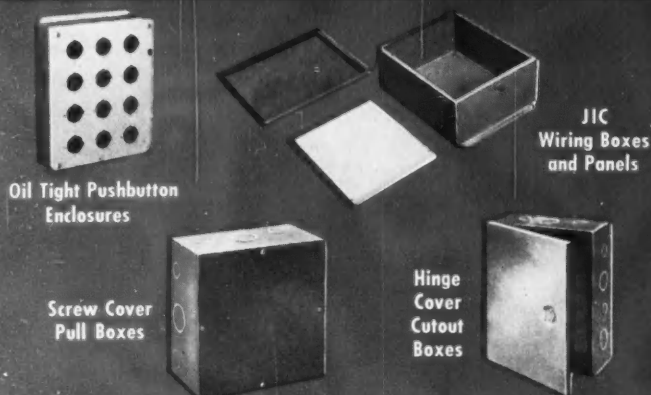
Here's a rugged bender for heavy-wall conduit. Deep notch in lifting hook protects threaded ends. Face of bender has hardened teeth for safe, long wearing, non-slip grip.

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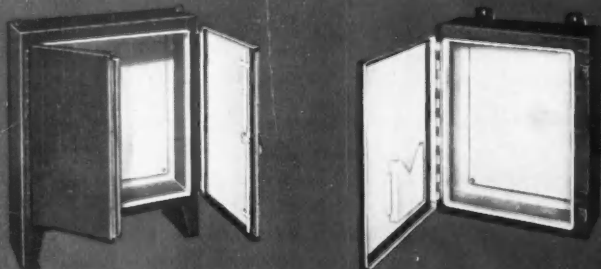
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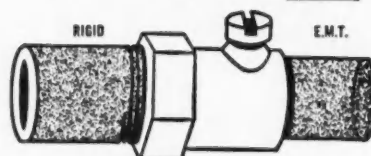
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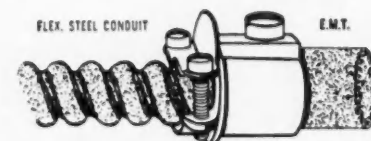
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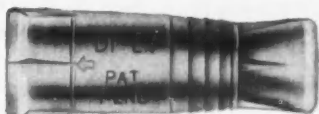
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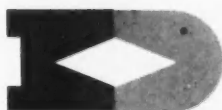
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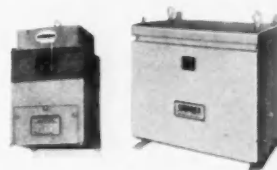
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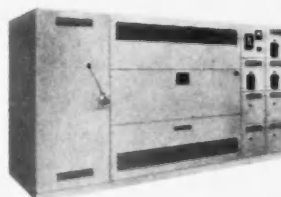
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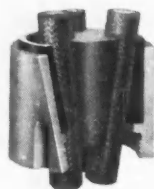
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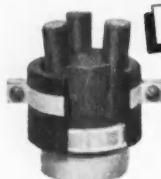
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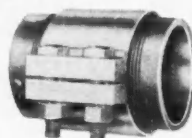


CABLE SUPPORTS
CONDUIT TYPE



CABLE SUPPORTS
SPLIT TYPE

CONDUIT FITTINGS



SPLIT
COUPLINGS



EXPANSION
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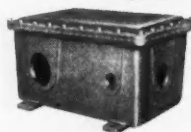


INSULATED
BUSHINGS

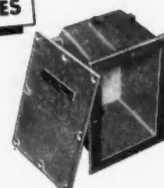


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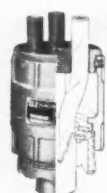
CAST IRON BOXES



EXPLOSION-PROOF
TYPE

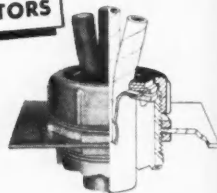


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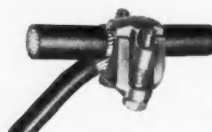


COMBINATION
LUGS

SOLDERLESS CONNECTORS



COMBINATION
TWO-WAY
CONNECTORS

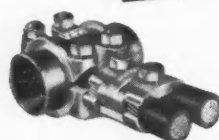


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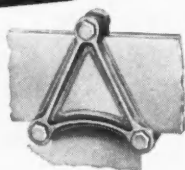


COMBINATION
TEE AND
PARALLEL CONNECTORS

POWER CONNECTORS

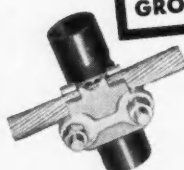


T-CONNECTORS, TUBE
TO MULTIPLE CABLE TYPE

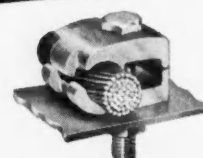


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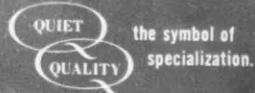
Up to 10,000 KVA, Up to 15,000 volts

TYPICAL APPLICATIONS

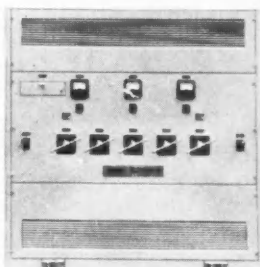
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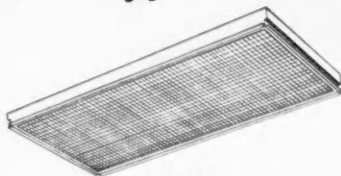
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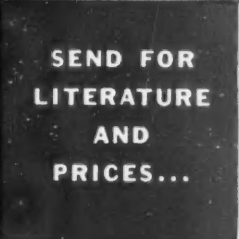
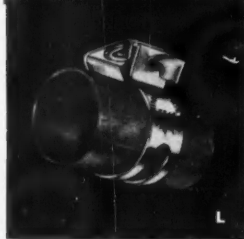
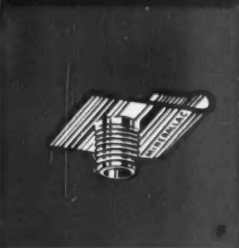
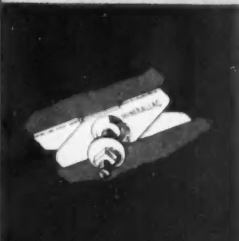
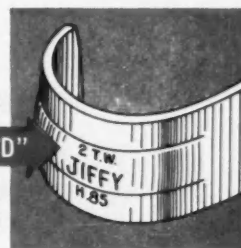
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G. Two-Piece Stud Clip—For mounting Fixtures, Boxes or Conduit Hangers to Tee Irons on Beams heavier than 1-

inch T-Bar. Fits flanges 1¼" to 2¼" width, up to ¼" thick.

H. No. 100 “Pull-In” Compound—For Rubber, Synthetic, Plastic or Lead-Covered Wires or Cables. Approved by Underwriters’ Laboratories for lubricating wires and cables to facilitate pulling them into conduits. Not injurious to wire or covers. Available in pint, quart, ½-gallon, gallon and 5-gallon cans.

I. Insulating Compounds—A dependable line of insulating compounds for use in Cable Joints, Potheads and Terminal Bells. Eight types for various voltage, temperature and climatic conditions. Also Oil Insoluble Compounds. Available in ½-gallon, 1-gallon, 2-gallon, 5-gallon and 50-gallon drums.

J. Ring Hangers—For supporting cable, conduit or pipe. Stocked in sizes from ½" to 2". Can be used in combination with Mineralac Perforated Strap, Zinc-Plated Steel. Special sizes available on request.

K. Two-Hole Pipe Straps—For cable, conduit and pipe. Available in Zinc-Plated Steel or Everdur for sizes from ½" T. W. to 1" I.P. Available in Zinc-Plated Steel only for sizes from 1½" T. W. to 6" I. P.

L. “Minn-Twist” Hangers—Supports pipe and conduit. Install with screw or bolt. Hang conduit in hanger. Insert tongue in slot and twist with closing wrench.

MINERALLAC[®] Electric COMPANY

ESTABLISHED 1894

25 NORTH PEORIA STREET • CHICAGO 7, ILLINOIS



BEFORE YOU INSTALL ANOTHER MOTOR STARTER,
MEASURE ITS TOTAL VALUE

Fast, easy installation is essential, but what other factors should determine your choice?

Quick installation? Easy maintenance? Years of faultless operation? No doubt about it . . . nobody buys a starter that doesn't deliver these key benefits. And, these qualities have always been built into Cutler-Hammer motor starters.

But, we've long been aware that other considerations are equally important to our customers. Hundreds of buyers have told us they often choose Cutler-Hammer starters because of certain *non-product* factors which, combined with top quality and performance, give them total value on every starter they buy:

"OFF-THE-SHELF" AVAILABILITY. Over 91% of your standard starter needs are available from local stocks. Even very special requirements can often be handled overnight. With Cutler-Hammer, complete starters or replacement parts are a phone call away . . . from the balanced stocks of more than 600 Distributors backed by 66 district offices and 17 regional warehouses.

COMPLETE SERVICE. Both your Distributor and your Cutler-Hammer man treat your application problems as their own. Together they are equipped to handle your special requirements—and emergencies—in just a matter of hours.

FULL PRODUCT LINE. Cutler-Hammer offers you a complete line of ten NEMA sizes . . . 00 through 8. The entire starter line is designed to rugged industrial standards . . . is proven in hosts of applications . . . and exceeds NEMA requirements in every respect.

So, next time you're contemplating a motor starter installation, don't stop short with an evaluation of product factors only. Also measure the extra *non-product* values you get with Cutler-Hammer's immediate availability, complete service, and a full product line. For complete product details, and for Cutler-Hammer's *total-value* story, call your local Cutler-Hammer Distributor right away!

**NEW!
FREE!
HANDY CATALOG**

Covers motor control and distribution apparatus that a contractor uses in industrial, commercial and residential work. Send for publication LU-50-241.

WHAT'S NEW? ASK...

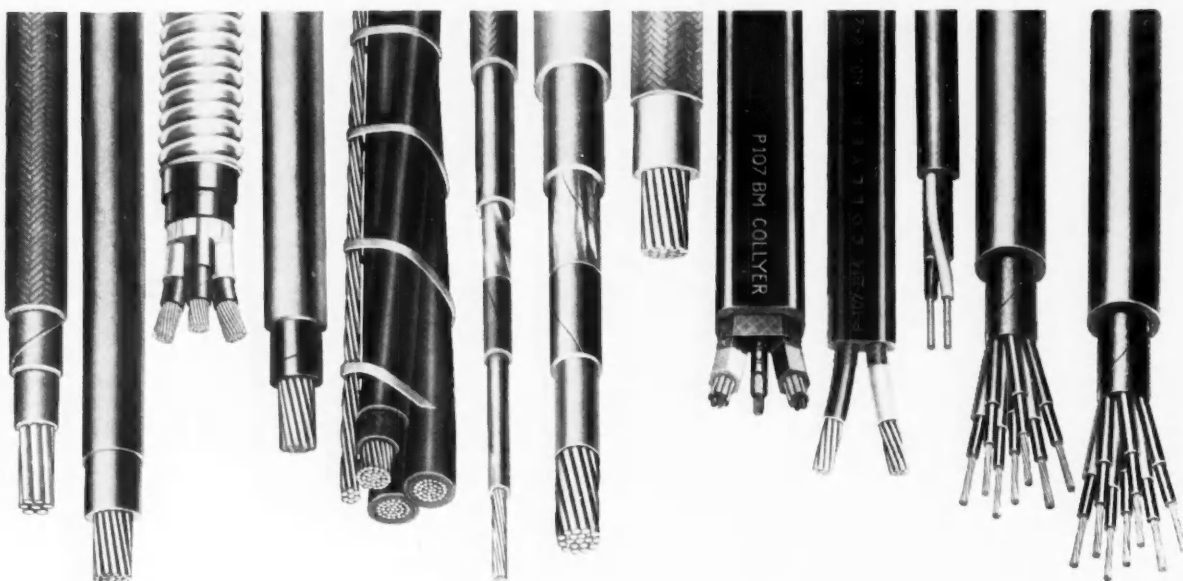
CUTLER-HAMMER

Cutler-Hammer Inc., Milwaukee, Wisconsin • Divisions: AIL; Mullenbach • Subsidiaries: Uni-Bus, Inc.; Cutler-Hammer International, C.A. • Associates: Cutler-Hammer Canada, Ltd.; Cutler-Hammer Mexicana, S.A.





HOW ELSE
SHOULD
YOU MEASURE
A MOTOR
STARTER?



POWER CABLES

PORTABLE CABLES

CONTROL CABLES

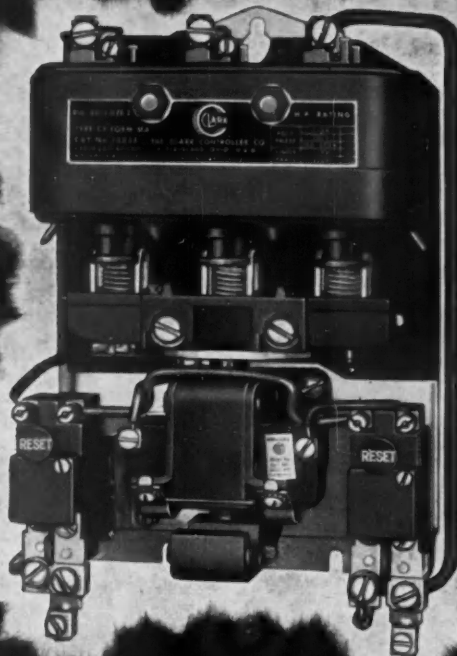
In a brand-new 400,000 sq. ft. plant at Lincoln, R. I., Collyer makes the finest electric wires and cables for • residential and commercial construction • industrial power distribution and control systems • electric utility systems • shipbuilding, welding and mining • traffic control and police and fire alarm systems • elevator controls • airport lighting • missile bases and other military applications.

Collyer

Flexible production lines permit prompt scheduling of orders. You get what you want when you want it. Write for name of nearest representative.

COLLYER INSULATED WIRE CO.
100 Higginson Ave., Lincoln, R. I.

What's the
measure of
starter
performance?



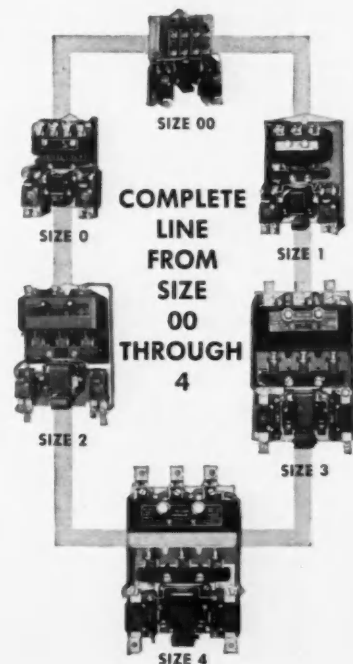
COMPARE RELIABILITY

Clark "CY" Magnetic Starters give you more

Buy on proof of performance! Make your own comparison and see how reliable an AC starter can be in the toughest applications you can find. Compare under any operating conditions and you will see why verified user reports underscore the reliability of Clark "CY" design...the performance advantages of "CY" engineering...the care and attention to detail of "CY" manufacture.

Your own comparison will also prove that Clark's rugged AC magnetic starters give you more added safety, service life, ease of installation and economical maintenance. The comparison costs you nothing—the proof can save you money!

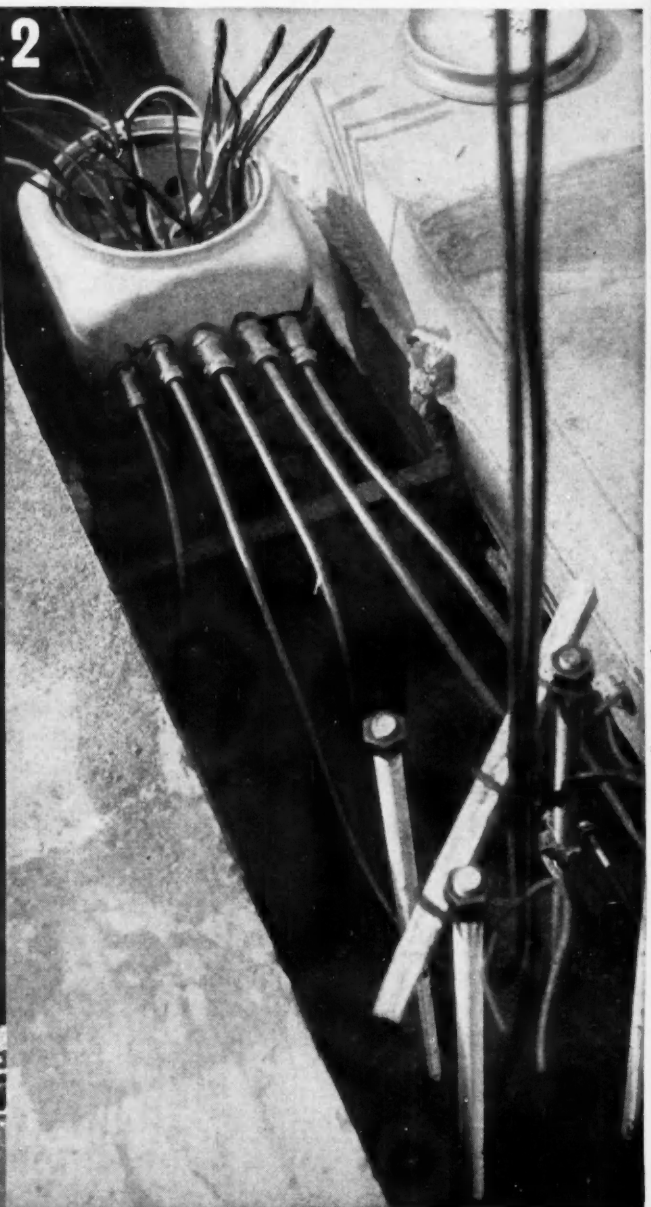
Clark Type "CY" AC Magnetic Starters are available in many combinations and in a variety of enclosures to meet every industrial application. Your local Clark distributor or district sales representative will be glad to help you set up your own comparison tests. Ask him for literature on the complete Clark Type "CY" Starter line. Or write direct.



Good contractors install MI

No other cable offers the speed, the economy, the safety that Mineral Insulated Cable gave to this service station remodeling...No other cable fits such a wide variety of 600-volt-and-under applications...No wonder more and more

1 Stripping MI Cable for termination. Next: lay cable, make junctions — and you're done! **2** MI leaves explosion-proof junction box. Bends and offsets are hand-made — without a hickey. **3** Sand-filled breakaway service station island being rewired with MI. Rugged, solid MI virtually eliminates problems of moisture, freezing, explosion. It is rigid — stands free as shown...but so flexible a free length remains in pump base, permits easy offset to junction box regardless of location. **4** MI Cable meets pump junction box. Termination is Type H — special for hazardous locations.

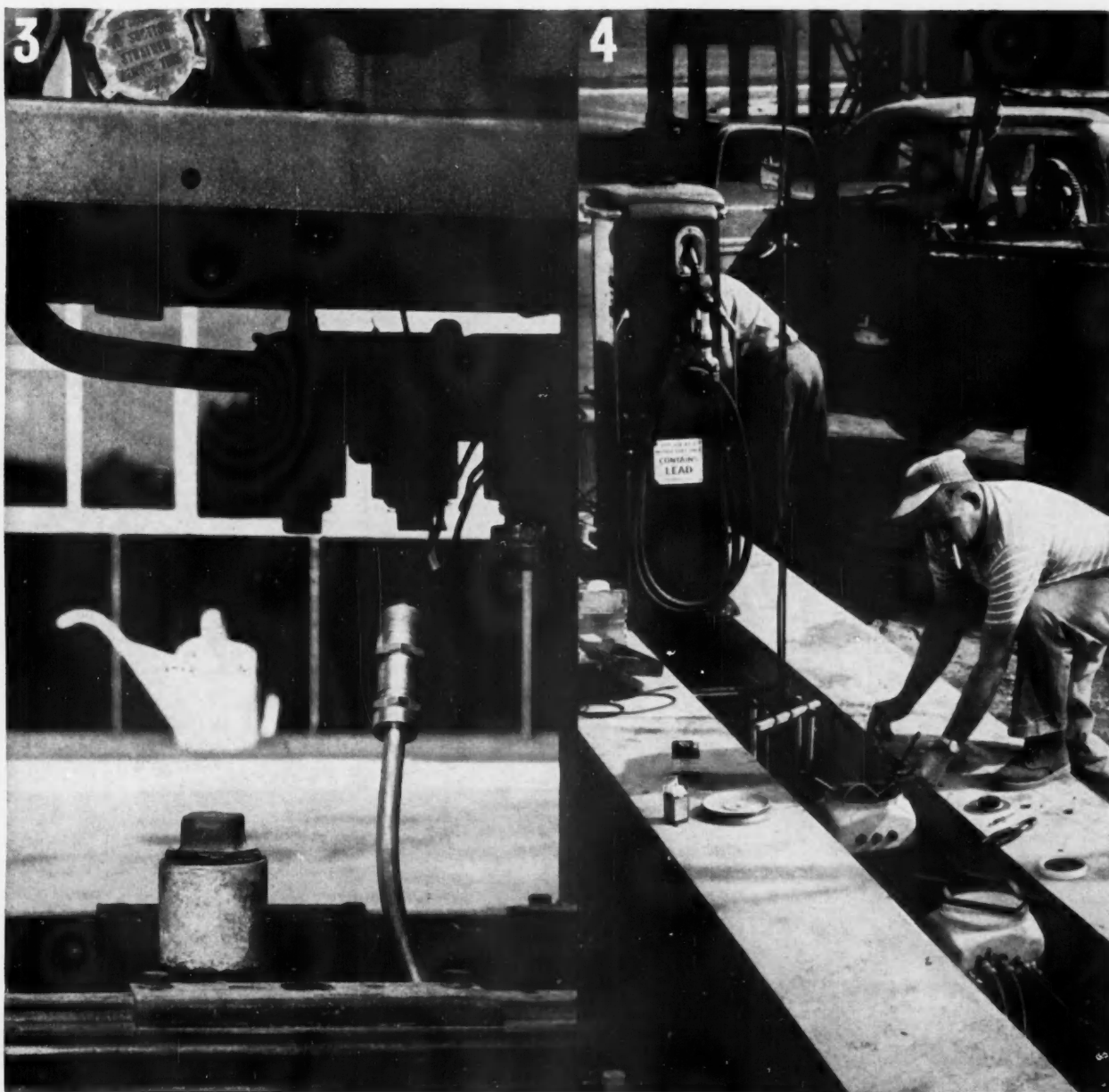


Cable for service stations, too

contractors bid more and more jobs on the basis of MI Cable!
Be sure you have on hand all the latest MI information.
Write General Cable for your copy of Catalog S-2. General
Cable Corporation, 730 Third Avenue, New York 17, New York

HERE'S WHAT MI CABLE MEANS TO YOU: SAVES TIME Just train cable from power to use, and terminate. That's all! **EASY TO USE** because MI is lighter, more flexible, about half the OD of equivalent conduit. **FLEXIBLE — RIGID** Train MI by hand — it keeps its professional look with few supports. **RESISTS HEAT** Continuous use: 185°F...special applications: 482°F...short duration: up to melting point of the sheath. **RESISTS MOISTURE, VAPOR** Liquids and gases can't pass along MI's solid core, nor penetrate its sheath. **NEC APPROVED** for general use in Article 500 of Amended 1956 NEC. Many other regulating bodies have approved MI, including for use in hazardous locations. **WIDE VARIETY** Comes in 1, 2, 3, 4, and 7/C — in all regular AWG conductor sizes.

GCC
GENERAL CABLE CORPORATION



In the interest of **BETTER ELECTRICAL PREVENTIVE MAINTENANCE** ... we offer a complete line of improved **MEGGER® Insulation Testers**

Even the great corps of electrical men who have known and depended on Megger Testers for as long as 50 years will find important and useful new refinements in these most sturdy and reliable of instruments.

Select them with ease

**HAND-OPERATED
RECTIFIER-OPERATED
DUAL-OPERATED
TWO-VOLTAGE**

Megohm scale $\div 1$ and $\div 10$, Ohm scale and Capacitance Discharge on one selector switch or the basic megohm scale only.

Ranges from 0-20 to 0-10,000 megohms, at voltages of 400 to 1000 volts d-c. Ohm scales from 0-10,000 to 0-100,000. One model with 500 and 1000 volts d-c in one instrument.

Use them with confidence

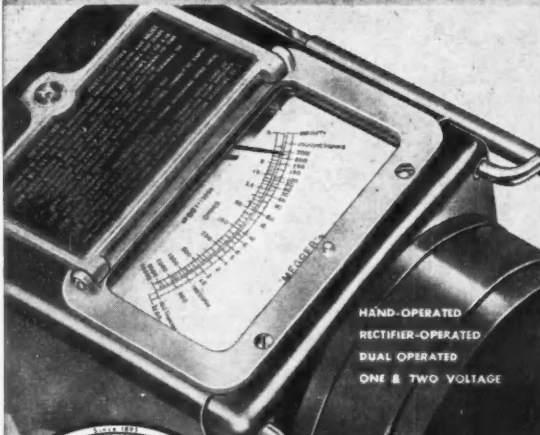
These compact, conveniently portable instruments have earned popular acclaim from electrical men everywhere—the men who keep plants operating and production lines moving. These are the men who also keep profits from becoming losses.

A minimum of experience is required to use a Megger Tester and interpret its measurements. The few practical suggestions clearly and simply stated in the well known Megger Manual are all the electrical maintenance man needs to obtain accurate and reliable information for those test records of important production equipment.

BULLETIN 21-45
FEBRUARY, 1961

MEGGER

MEG TYPE INSULATION TESTERS



HAND-OPERATED
RECTIFIER-OPERATED
DUAL OPERATED
ONE & TWO VOLTAGE

BIDDLE
INSTRUMENTS

JAMES G. BIDDLE CO.

Electrical and Speed Measuring Instruments
1316 ARCH STREET • PHILADELPHIA 7, PENNSYLVANIA

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**NEW
BULLETIN**

to your
file of
valuable
literature

Ask for
**BULLETIN
21-45ECM**

Hoffman **JIC and NEMA 12** OIL-TIGHT DUST-TIGHT **ELECTRICAL ENCLOSURES**

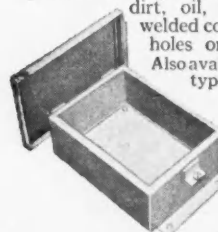
WALL MOUNTED,
in 18 stock sizes.
FLOOR MOUNTED,
in double door or
multiple door
units — 11
stock sizes.



**JIC
NEMA 12
PANEL**

ENCLOSURES

Ideal for housing electrical controls, components and terminal strips. Note removable mounting panel. Neoprene gasket on door protects against dust, dirt, oil, water. Strong welded construction. No holes or open seams. Also available in NEMA types 1, 3, 4 and 5.

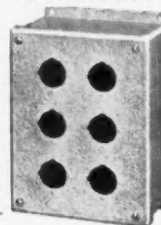


**JIC
WIRING
BOX**

Heavy gauge steel, welded seams. No knockouts or holes to leak oil, water or dust. Neoprene gasketed cover with screw clamp makes tight oil-proof seal. Available with or without removable panel. 8 stock sizes from 4"x4"x3" to 16"x14"x6".

**PUSHBUTTON
ENCLOSURES**

A complete selection of types and sizes. Fine quality construction and finish. Welded seams. Cover has neoprene gasket. Holes take any standard oil-tight pushbutton. Types range from "Standard" as shown, to Extra Deep, Slim and Pendant. For one to 25 pushbuttons.



**OIL-TIGHT
JIC SECTIONAL
WIREWAY**



Perfect protection for control wiring. Neoprene gasket on cover and between joints seals out liquids and dust. Easy to assemble. Full length hinged cover simplifies wiring installation or modification after installation. Stock sizes: 2½"x2½", 4"x4" and 6"x6" in lengths up to 10' with Elbows, "T"s, etc.

We also build enclosures to customer specifications

Hoffman **ENGINEERING CORPORATION**
Dept. EPG-127 Anoka • Minn.



RUGGED!

GEDNEY'S NEW "SERIES 77" CONDUIT BODIES

made of **malleable iron** —competitively priced!

Here's everything you have ever asked for in conduit bodies— Malleable iron ruggedness makes them virtually indestructible during installation and on the job. • A streamlined look and lightness of weight. • A durable cadmium plating and lacquer finish that glistens with "quality." • An "oval" design that will accommodate all standard covers. • Available in both rigid conduit and E.M.T. styles in sizes $\frac{1}{2}$ " through 2" in types "C,"

"LB," "LL," "LR" and "T." • And they are priced competitively with any other conduit body you can buy! In addition to the new "Series 77" line, Gedney is now also furnishing all types of threaded oval conduit bodies currently listed with a hot dip galvanized finish at no extra cost. • See Gedney's general catalog for a complete listing of all conduit body types in sizes through 4".

For conduit clean-cut tapered threads



GEDNEY ELECTRIC COMPANY, INC.
GENERAL OFFICES: 1270 SIXTH AVE., RADIO CITY, NEW YORK 20, N.Y.
FOUNDRY, FACTORY & SHIPPING POINT: TERRYVILLE, CONNECTICUT

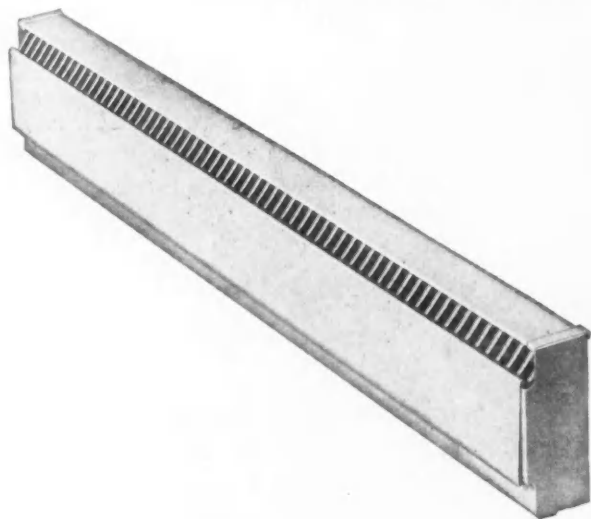
For EMT Hex head case hardened screws with shakeproof washers.





Electric Heat is featured
in Gold Medallion Homes
Equipped by General Electric

Five built-in time savers with General Electric's new baseboard heaters



Modern, eye-appealing square silhouette . . . safe linear cut-out standard on all models . . . dependable General Electric Calrod® heating unit with extra radiating surface for fast heat recovery . . . these and many other features will help you sell General Electric's new baseboard heaters.

And installation is faster because: ① Calrod heating unit needs no disassembly, ② raceways have ample space for wiring when interconnecting heaters, ③ all wiring connections are easily reached in front, ④ sections are quickly joined at either end, and ⑤ all heater covers, end caps and corner pieces are held securely in place.

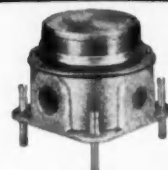
Easier-to-sell, faster-to-install baseboard heaters are featured in the all-new General Electric line that brings you a 'super-market' of electric comfort heating equipment—offers the right answer to every heating problem.

For details and specifications, write Sect. 280-08-2, General Electric Company, Electric Comfort Heating Section, Appliance Park, Louisville 1, Ky.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

**Latrobe
PRODUCTS**
★ FLOOR BOXES ★ WIRING SPECIALTIES ★



ADJUSTABLE CAST IRON BOX

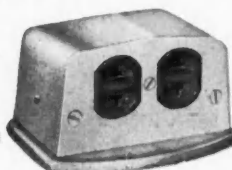
Fullman's No. 122 Watertight Adjustable Floor Box with cast iron box body, comes in two standard heights — 3 1/8" and 2 5/8" minimum. Designed for either power or telephone service. Brass and aluminum (anodized) top assemblies to go with (anodized) nozzles at no extra cost. Adjusting ring and screw legs make for quick and easy tru-leveling.



Adjusting ring for our #122 and #190 series is so designed that "KEY" (shown in center of photo) drops easily into special slots. You select the receptacle required and simply "LAY-IN"; then "LAY-ON" receptacle ring. This has been added at no extra cost.

COMPACT NOZZLE

No. 307 Series



This Duplex Receptacle or Telephone Nozzle is one inch shorter in length than standard under floor duct nozzles. They are made single or double (back-to-back) and include 1" nipple. Come in Brass (lacquered) or anodized Aluminum. Anodization and grey receptacles no extra charge.

Height	Width	Length
2 3/8"	2 3/8"	3 1/2"

PIPE or CONDUIT HANGERS



This is the No. 470 malleable series for hanging pipe or conduit 1/2" thru 2 1/2" to steel beams 3/8" thick. Can be turned 360° (Both Right Angle and Parallel). Excellent for confined areas. No drilling, no use of straps. Available in high strength Aluminum.

Serving the Electrical Industry for 30 Years

Sold only thru
wholesalers

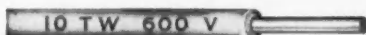


**Fullman
MANUFACTURING
COMPANY**

1209-1215 JEFFERSON ST.
LATROBE, PENNSYLVANIA



ALCOA ALUMINUM CONDUIT: Light-weight cost, heavyweight performance. Weighs about $\frac{1}{3}$ as much as steel conduit. Cuts easier, threads easier, bends easier. Low first cost. Gives long-term performance because it resists corrosion and staining, is non-toxic, keeps its good appearance for years.



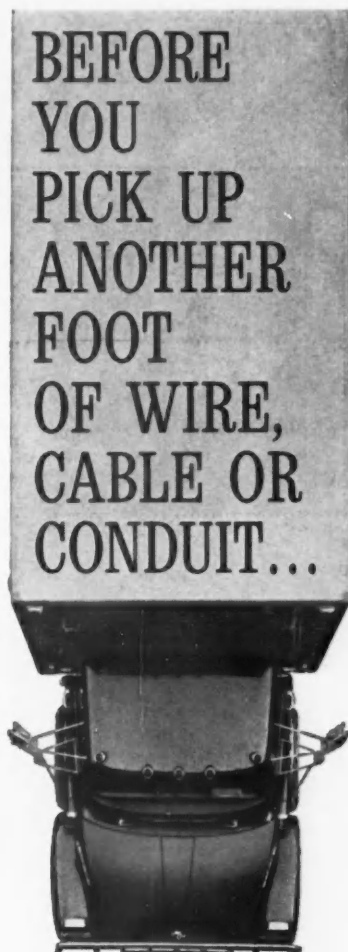
ROME BUILDING WIRE, TYPE TW: Resists heat, chemicals, flame, etc. Synthanol (thermoplastic) insulation gives you exceptional protection against heat, sunlight, oils, acids, alkalis, moisture, fire. Approved for wet or dry installations, up to 60° C. Available with aluminum conductor in size 6 AWG and larger and copper conductor in all sizes.



ROME POWER CABLES for low- and high-voltage jobs. Rome gives you a choice of aluminum or copper conductor, oil-base or butyl-base insulation, several kinds of jacketing. You get exactly the combination you need to resist weather, water, heat, cold, fire, abrasion, chemicals, oils, aging. *New stockpiling program at Rome Cable lets you order 5kv and 15kv single-conductor cables for immediate off-the-shelf delivery.*



SERVICE ENTRANCE CABLE: Installs faster, looks neater. You can get Rome's Type SE-U service entrance cables in copper or aluminum. Their light weight, clean exterior and other extra advantages help you make each installation a fast, neat one. Approved for 75°C in dry or wet locations.



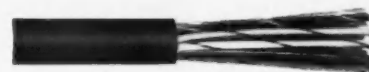
can this
QUICK ALCOA GUIDE
help you do a better,
more profitable job?



MULTI-PURPOSE 600-VOLT CABLE for distribution and service entrance. Type RHW or USE resists abrasion, flame, weathering, oil, moisture, most chemicals. Approved for underground, duct, conduit and open wire installation for temperatures up to 75° C.



NONMETALLIC SHEATHED CABLE: Multi-purpose, and resists corrosives. Rome's FlexAll, Types UF and NMC, is approved as underground branch circuit and feeder cable. Copper conductor. Solves special problems such as between-building wiring in farm, industrial, residential projects, yard lighting, and interior wiring in barns, dairies, breweries, packing houses, cold storage and ice plants.



NEW STANDARD CONTROL CABLE: New savings, new versatility. Rome's new CT multi-purpose control cable may be installed in open air, duct, conduit, tray, trough, or buried directly in earth. Type CT-B is rated for 600 volts AC or DC and Type CT-C for 1000 volts AC or DC. Both types are supplied with from 2 to 37 conductors in size No. 10 or No. 12 AWG copper. Appearance, light weight and smaller diameters are attractive features of this inventory-saving control cable.



YOURS FREE: Fact-filled bulletins and other information on these products will be sent on request. No obligation, of course. Just contact your distributor, or write to: Rome Cable Division of Alcoa, Dept. ECP-92, Rome, New York.



PLM Type ACSF Terminator



Unusual locations?

There's a **PLM** fitting to fit the job!

Faced with unusual mounting problems in terminating armored cable runs? Chances are there's a standard PLM fitting made to fit the job—or, if there isn't, that PLM can furnish you adaptations, *fast*, to meet your needs!

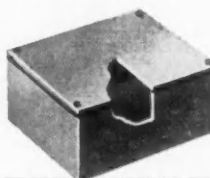
PLM flange-type terminators are supplied to fit most pothead base dimensions, and for indoor or outdoor mounting on switchgear or other applications. Other types of terminators for through, bracket or angular mounting. The complete line of PLM fittings and terminating and splicing kits for armored, non-metallic jacketed and lead-covered cable through 23 kv is described in PLM 52-page catalog 301. Write for copy on your letterhead.

PLM TERMINATING AND
SPlicing ACCESSORIES
Products, Inc

3875 WEST 150th STREET • CLEVELAND 11, OHIO

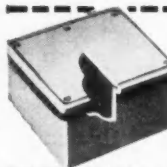
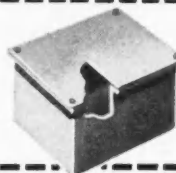
CAST BOXES BY SPRING CITY

17 styles and 1157 sizes available in cast iron, aluminum, brass and bronze alloys. Spring City offers the greatest number of box styles, and the greatest number of box sizes than any other company in the electrical field. 1960 catalog available. Representative styles illustrated below.



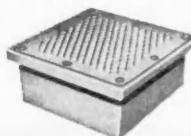
**DUST-TIGHT AND WEATHER-PROOF
TYPE S**
Surface mounted, 160 standard sizes plus others

**WATERTIGHT AND SUBMERSIBLE
TYPE FF**
Surface mounted, 95 standard sizes plus others

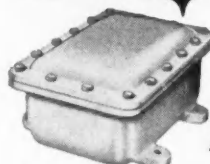


**WATERTIGHT AND WEATHERPROOF
TYPE ER**
Flush mounted, 53 standard sizes plus others

**DUST-TIGHT AND WEATHERPROOF
TYPE SW**
— Checkered cover sidewalk boxes, flush mounted, 55 standard sizes plus others



EXPLOSION-PROOF HOUSINGS



- CAST IRON
- CAST ALUMINUM

Type EX boxes meet N.E.C. requirements for Class I, Groups C & D hazardous locations. Standard construction includes extra-thick walls, highly machined flanges, great number and close spacing of cap screws, and minimum of 5 full thread conduit entrances. 112 standard sizes plus others. Made to Underwriters and Military Specifications.

**SPRING CITY
ELECTRICAL MFG. CO.**

SPRING CITY 70, PENNA.
Phone — Williams 8-4000

For that certain kind of contractor who
demands the best...

Sierra® WIRING DEVICES



SWITCHES



5001

SILENT MERCURY

No moving springs
or blades to fail.
Each switch load-
tested.



5002



5003



5004

Quiet SWITCH

Combines effort-
less toggle action
with positive cur-
rent control.



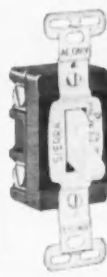
5011



5012



5013



5014

SAVE THIS HANDY SELECTOR GUIDE

for Specification Grade devices

DESCRIPTION	SILENT MERCURY SWITCHES		Quiet SWITCHES*			
	IVORY	BROWN	15 AMP		20 AMP	
			IVORY	BROWN	IVORY	BROWN
Single Pole	5001	5001X	5011	5011X	5051	5051X
Double Pole	5002	5002X	5012	5012X	5052	5052X
Three-Way	5003	5003X	5013	5013X	5053	5053X
Four-Way	5004	5004X	5014	5014X	5054	5054X
Sierra-Life with glowing toggle						
Single Pole	5005	—	—	—	—	—
Three-Way	5006	—	—	—	—	—

RATINGS			RATINGS	
125V "T"	250V	120V, AC	120—277V, AC	
10A	5A	15A	*Key operated types also available.	



RECEPTACLES

SIERRAPLEX

First major design improve-
ment in years! These distinc-
tively styled receptacles are
complemented by a full line
of matching wall plates.
Specification Grade. Meet
all existing codes and
standards.



1800



1600



1801



1601



1700



1500



1850



1900

DESCRIPTION	PARALLEL SLOTS 15A-125V		TANDEM SLOTS 15A-250V	
	IVORY	BROWN	IVORY	BROWN
BACK AND SIDE WIRED				
Single Grounding-Type 3-wire	1600	1600X	1601	1601X
Duplex Grounding-Type 3-wire	1800	1800X	1801	1801X
Comb. Duplex Grdg-Type 3-wire 15A 125V-250V			1850	1850X
Single Convenience 2-wire	1500	1500X	—	—
Duplex Convenience 2-wire	1700	1700X	—	—
SIDE WIRED				
Single Grounding-Type 3-wire	1602	1602X	1603	1603X
Duplex Grounding-Type 3-wire	1802	1802X	1803	1803X
Comb. Duplex Grdg-Type 3-wire 15A 125V-250V			1852	1852X
Single Convenience 2-wire	1502	1502X	—	—
Duplex Convenience 2-wire	1702	1702X	—	—
Triplex—Single Circuit	1900	1900X	—	—
Triplex—2 Feeds—1 Return	1901	1901X	—	—
Triplex—2 Feeds—2 Returns	1902	1902X	—	—

SIERRA

Conventionally styled, this
popular line offers same high
quality and craftsmanship as
Sierraplex. Features include
2 grounding screws on 3-wire
types, handy wire strip gage,
and break-off strip for 2
circuits.



1400



1200



1401



1201



1300



1100



1450

BACK AND SIDE WIRED				
Single Grounding-Type 3-wire	1200	1200X	1201	1201X
Duplex Grounding-Type 3-wire	1400	1400X	1401	1401X
Comb. Duplex Grdg-Type 3-wire 15A 125V-250V			1450	1450X
Single Convenience 2-wire	1100	1100X	—	—
Duplex Convenience 2-wire	1300	1300X	—	—
SIDE WIRED				
Single Grounding-Type 3-wire	1202	1202X	1203	1203X
Duplex Grounding-Type 3-wire	1402	1402X	1403	1403X
Comb. Duplex Grdg-Type 3-wire 15A 125V-250V			1452	1452X
Single Convenience 2-wire	1102	1102X	—	—
Duplex Convenience 2-wire	1302	1302X	—	—

WALL PLATES

Choose from world's most
complete line! Over 5000
wall plates in Plastic, Brass
and Stainless Steel; and in a
variety of styles, colors,
finishes, combinations and
gangs.



STAINLESS
"S" LINE



BRASS
"B" LINE



PLASTIC
"P" LINE



PLASTIC
"D" LINE

Write for catalog



SIERRA ELECTRIC CORPORATION

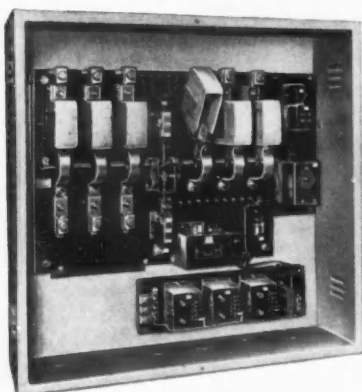
15100 S. Figueroa Street
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Leadership through craftsmanship

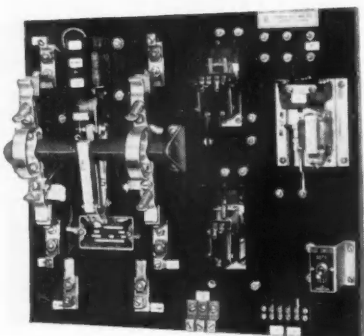
ZENITH

AUTOMATIC TRANSFER SWITCHES...

engineered to assure continuous power,
safeguard life, property, production.



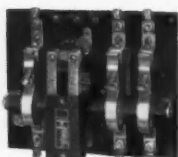
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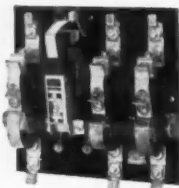
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MAGNETIC CONTACTORS...

reliable power switching,
rugged durable design.



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Zenith Automatic Transfer Switches and Contactors are rated from 30 to 600-amps., 250 and 600-v. operation.

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Zenith has been engineering and manufacturing a complete line of electromagnetic controls and timing devices for over 35 years.

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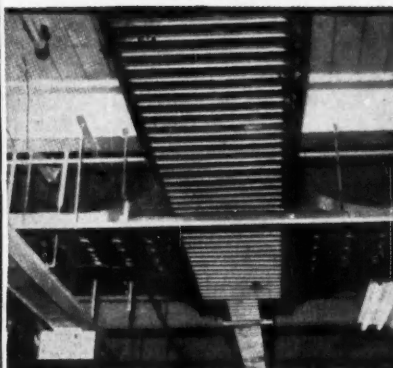


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Save Time, Money
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P-W CABLE SUPPORTING SYSTEMS



P-W's TYPE "E" (PUNCHED BOTTOM) TRAYS—FOR POWER AND CONTROL CABLES AND INSTRUMENT TUBING—ALTHOUGH LESS EXPENSIVE, ARE STRONGER, VERSATILE AND SUPERIOR. CONTROL CABLE CAN BE DROPPED OUT ANYWHERE.

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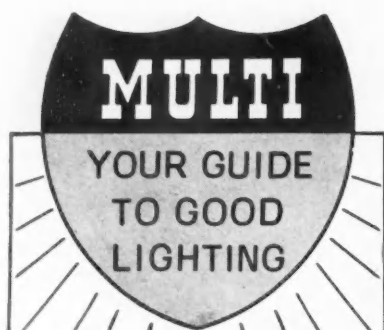
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fittings or kits to speed the job!

The result will be an economical, trouble-free installation... from the most complete line of cable fittings available today. Sizes include 4/0. You'll save, too, on M&W Mast Kits and Fittings in sizes from 1 1/4" to 4" conduit risers.

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The M. & W. ELECTRIC MFG. CO., Inc.
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Patented

The Only Conduit Bender on the Market that will not Slip, Kink or Mash the Conduit

**New! Improved
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HICKEY**

Excellent for Steel, Aluminum
or any Standard Conduit

The reason is in the groove. It is so designed that the pressure in bending is on the sides, leaving the top of conduit free from any pressure so that it can contact in process of bending, which prevents kinking and slipping. Just compare its bending performance against any other bender.

Easy to handle; light in construction; strong; very handy. The Silvey Hickey is a handy tool for conduit or pipe work. The 1/2" and 3/4" sizes fit a standard 1" conduit coupling. The 1" size requires a 1 1/2" coupling. Screw a piece of pipe in other end of coupling for handle.

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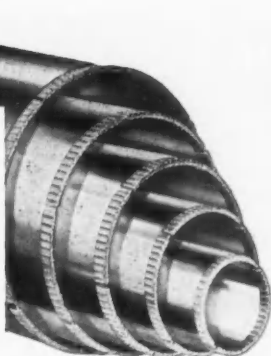
Any Silvey Hickey that breaks through defect will be replaced without cost to you. What's more, if it isn't entirely satisfactory—you are the judge—it can be returned and money refunded.

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**5 NEW MODELS PLUS POWER
COMBINATIONS=16 MODELS**

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• Holes up to 14"
• Electric or Air
• 6 Power options
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**HEAVY DUTY
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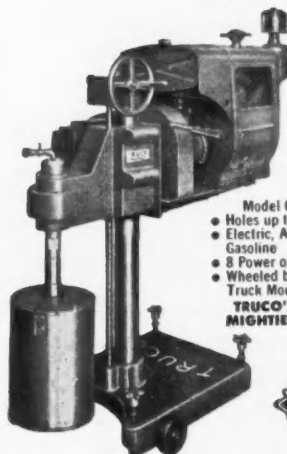
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ANCHOR ANY DRILLING MACHINE IN SECONDS WITH TRU-VAC VACUUM BASE. Slips under base of practically any portable drilling machine, anchors instantly for accurate, high-speed drilling in reinforced concrete etc. No anchor holes in floor or walls; no jack to ceiling. Exerts approximately, 1000 actual pounds vacuum; instantly releases for rolling to next location and re-anchoring. Quickest set-up ever. Write for Bulletin SC-7.

Truck mounted unit swings down into position for accurate, vertical drilling wherever a truck can go. Electric, air or gasoline power.

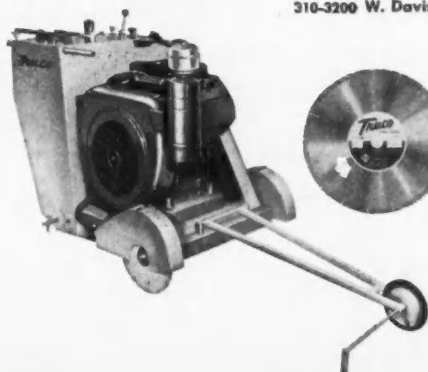


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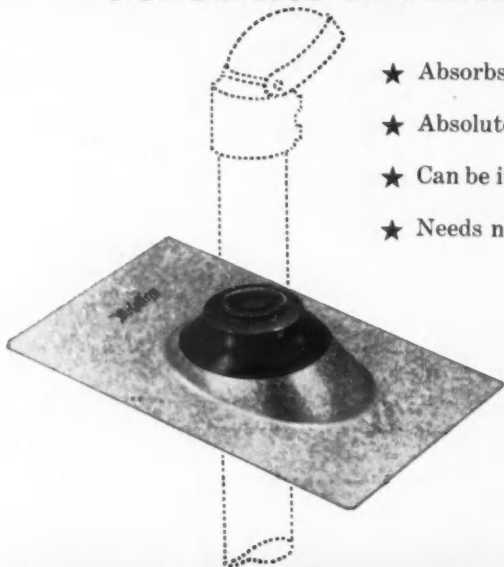
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This sturdy line of heavy-duty equipment will save money on every job and give years of high-profit service. Models for every type of application; diamond and abrasive blades for every type of material. Write for literature.



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- ★ Absorbs all vibration
- ★ Absolutely leak-proof
- ★ Can be installed in minutes
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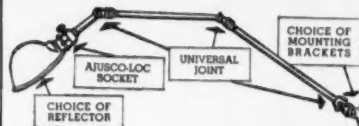
- Seal 2N fits both 2" & 2½" conduit
- Seal 1N fits both 1½" & 1¾" conduit
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Makers of Better Roof Flashings and Seals for Over 50 Years

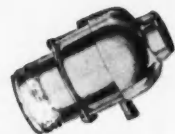
LOCAL LIGHTING

FOR MACHINE AND BENCH

Easy to Use—Hard to Damage



Exclusive
"AJUSCO-LOC"
Socket



Ajusco-Loc Socket—Guaranteed not to break, kink, twist, or pull apart.

Put the light where you want it and it stays there—no sagging or slipping. Eliminate costly repairs and lost time with these fixtures that stay on the job and out of the repair shop.

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There's a "right" fixture for every job.

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Established 1911
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12 foot
rolling
tower for
**LESS
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\$135***

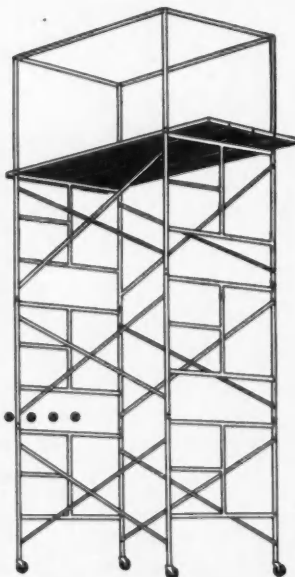
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YOU GET

- 6 - 4' x 4' frames
- 6 - cross braces
- 4 - guard rails
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Now, for little more than the price of a good ladder, you can increase efficiency and safety on all overhead installation and maintenance jobs with a convenient Safway rolling tower. Rigid, lightweight 4' x 4' steel frames support loads to 50 lbs. sq. ft. Are easy to handle, transport and assemble without tools. Finished in weatherproof enamel.

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*Approx. price, less planks. See your dealer for exact delivered price.



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**COMPOUNDS FOR
CABLE REPAIR**

EPOXIES Compounds for Cable Splicing and Terminating

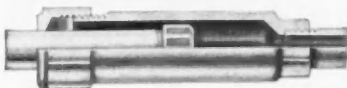
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Manufacturing Corporation
Cedar Grove, Essex County, N. J.
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EXPANSION FITTINGS...by SPRING CITY

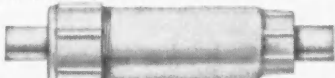
Conduit expansion fittings by Spring City relieve the strain of expansion and contraction in long runs of conduit. Applications: Strains caused by temperature changes, expansion joints in structures, and expansion joints in concrete. 1960 catalog available.



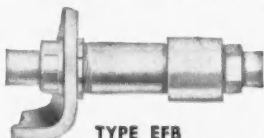
TYPE AF for rigid conduit. Allows 4" expansion and contraction.



TYPE EF for rigid conduit. Allows 8", 12" or more expansion and contraction.



TYPE TF for thin wall (EMT) conduit. Allows 4" expansion and contraction.

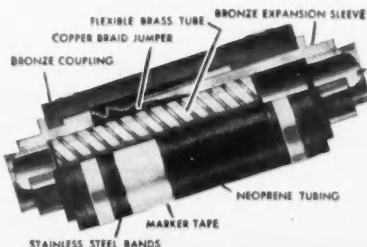


TYPE EFB for rigid conduit terminating in box. Allows minimum of 4" expansion and contraction.

DEFLECTION & EXPANSION FITTINGS

$\frac{3}{4}$ " movement in all directions.

30° angular deflection from the normal in any direction. Vibration damper between sections of conduit.



SPRING CITY ELECTRICAL MFG. CO.

SPRING CITY 70, PENNA.
Phone — Williams 8-4000

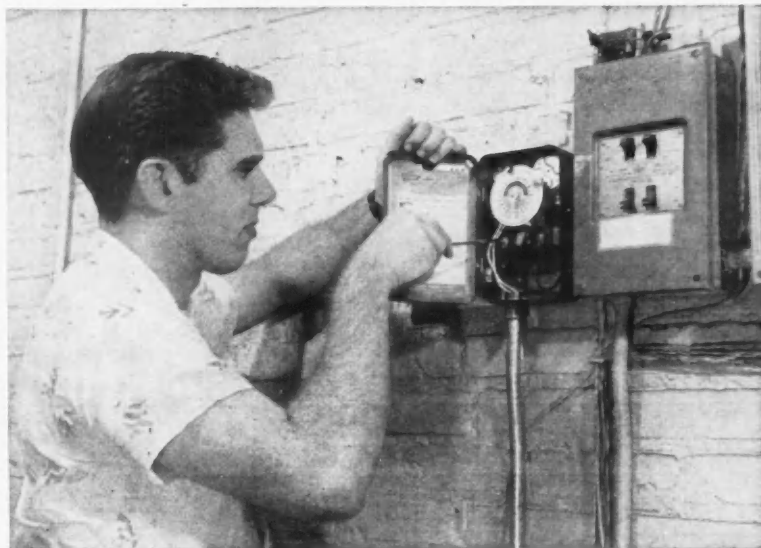
ELECTRICAL CONTRACTOR

meets

Intermatic®

TIME SWITCHES

Result: MORE DEPENDABILITY



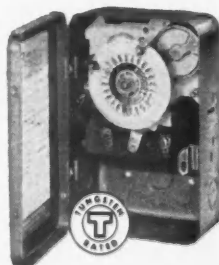
It's the tough jobs that separate a quality product from an "also ran." That's why more and more Electrical Contractors are using Intermatic switches for every conceivable timing job. They count on engineered Intermatic reliability and accuracy for top-notch operation year in and year out under the most extreme conditions. Reliability that means more customer satisfaction and fewer call backs to save you time and money on every job!

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Snap-out mechanism for faster, easier mounting . . . 31 cubic inches of wiring space to work in without getting finger cramp . . . Top on the job performance with a heavy duty motor and 40 Amp rating (4375 watts tungsten rated) . . . Hi-Power Switching mechanism and U-Beam Switch Blades assure long life . . . E-Z See Dial for faster, more accurate settings. It figures: Intermatic gives more switch for every dollar . . . more performance for every job.

OVER 100 MODELS TO CHOOSE FROM

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- NEW ASTRONOMIC DIAL SERIES

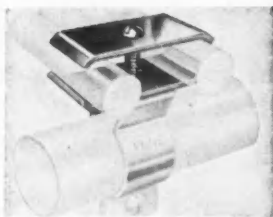


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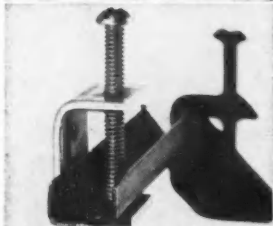
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A simple, inexpensive and secure method for fastening all kinds of electrical devices to tubular or angle iron web joists. Comes in two hole sizes, 1/4" & 3/8".



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Designed for use with 1" wide and up channels, 1/4" and "U" shaped or "I" beam members. Fastens easily, quickly, securely in any position. Works ideally with any Paine conduit clamp.



PAINE'S Heavy-Duty Senior Beam Clamp

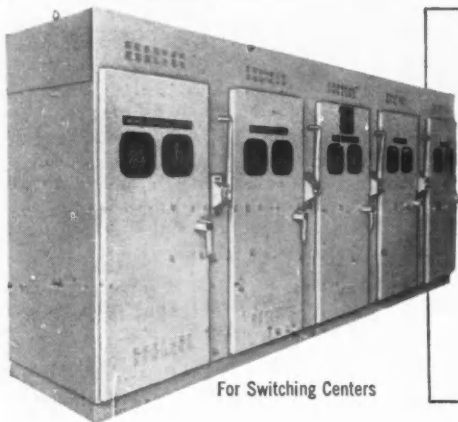
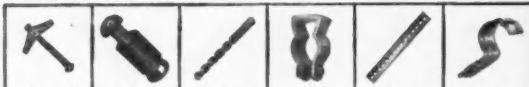
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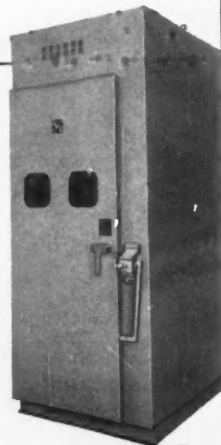
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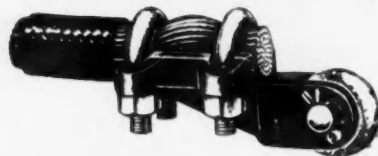


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Efficiency Cable Strain Clamps lock cable safely and securely without possible strain or damage. "H" construction of clamps and high ridge across center of cable prevents cable from slipping. Takes cable from 1/0 to 1,500,000 c.m. Three clamp sizes cover all cable sizes. Furnished with eye or clevis, for AC or DC service.

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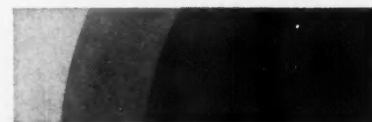
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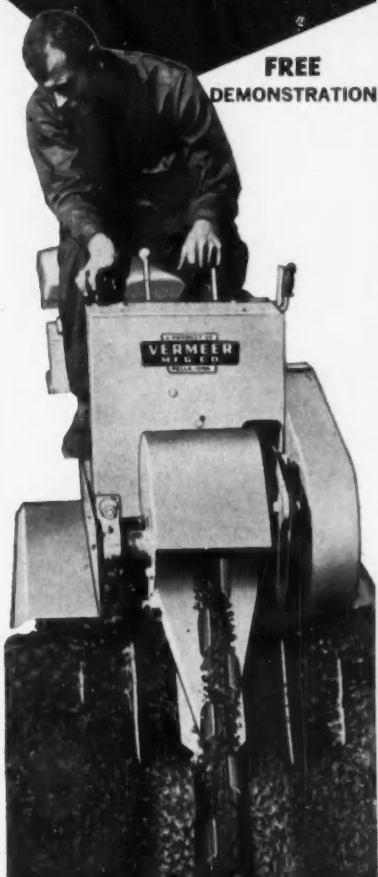
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Please send complete information on the new Vermeer Model W-1 Pow-R Ditcher.

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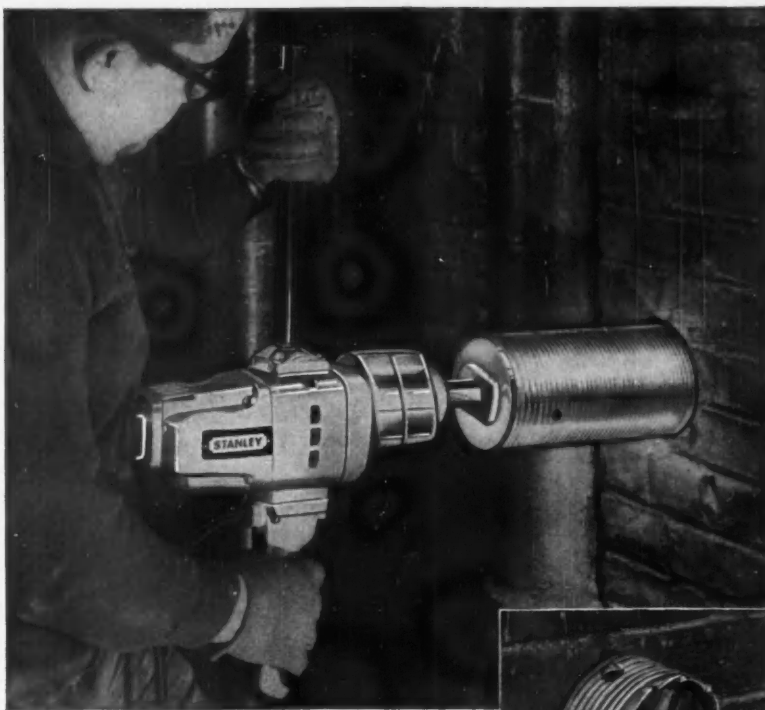
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Wire Pulling Lubricant
For Lead, Rubber, Braid or Synthetic Covered Cables



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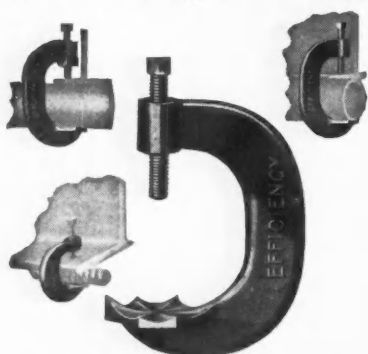
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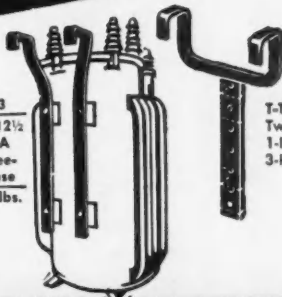


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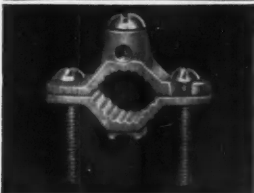
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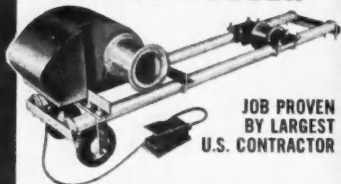
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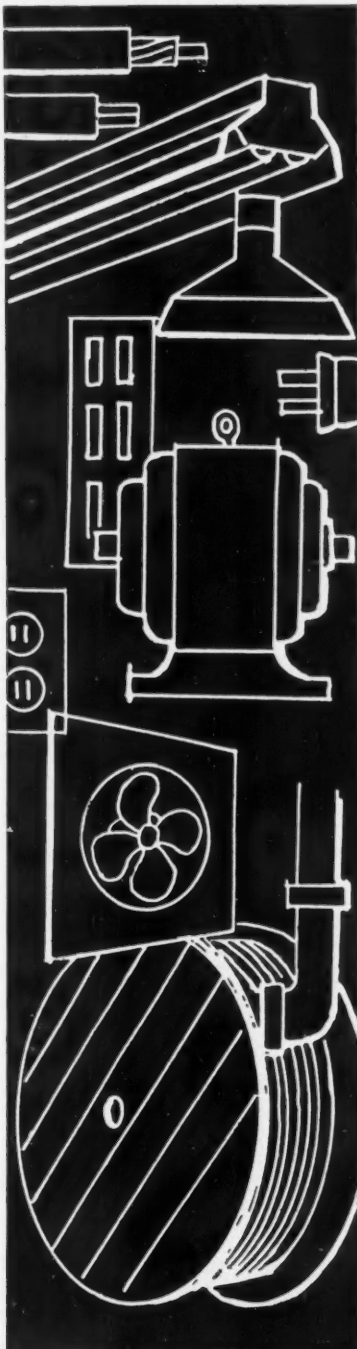


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PRODUCT DIRECTORY

Classified listings of manufacturers of electrical products



Products in this section are arranged under the following 12 major sections:

- | | |
|--------------------------------------|--|
| 1. Power Transmission Line Equipment | 7. Raceway |
| 2. Transformation & Conversion Eqpt. | 8. Motors & Generators |
| 3. Switching & Control Equipment | 9. Lighting Equipment |
| 4. Protective Equipment | 10. Signal, Communication & Indicating Eqpt. |
| 5. Wiring Devices & Boxes | 11. Heating & Cooling Equipment |
| 6. Conductors & Connectors | 12. Tools & Supplies |

Each of these sections is further broken down into individual classes of equipment. For example: Section 1, "Power Transmission Line Equipment," includes (A) CONDUCTOR SUPPORTING STRUCTURES, (B) LINE TRUCKS & MOBILE EQUIPMENT, (C) MANHOLE EQUIPMENT, and (D) POLE EQUIPMENT.

Where applicable, these classes are further subdivided. CONDUCTOR SUPPORTING STRUCTURES, for instance, include (1) Crossarms, (2) Poles, and (3) Towers. Companies manufacturing crossarms would be followed by a (1) in parentheses; those manufacturing poles would be followed by a (2); those manufacturing both would be followed by (1-2), etc.

The symbol (●) indicates that detailed information concerning the product may be found on the page indicated after the listing.

Technical Literature

Manuals, bulletins and other reference material on electrical products are listed following each of the twelve product classifications of the Product Directory. They may be obtained without cost or obligation by filling in the requested information on one of the Free Information cards on page 139.

PRODUCT INDEX

Manufacturers of equipment and materials normally used in electrical construction, plant operations and motor service work are listed in the Product Directory beginning on page 133. To find any specific product in this directory, locate the product first in the comprehensive alphabetical index below.

For example, this index shows "Cartridge fuses" to be listed under 4B. Turn to Section 4 and find "Cartridge fuses" as number 1 under "4B. Fuses". Companies listed under "Fuses" which are followed by the bracketed number (1) make cartridge fuses. Bold-face listings refer to advertising pages containing additional information.

A

Adapter removers, fuse	4C
Adapters, conduit bushing	7E
Adapters, grounding	5B
Adapters, socket	5C
Adhesive labels	12N
Adjustable floors	7C
Agitator-drive motors	8D
Air conditioners	11E
Air gap gauges	12E
Air handling equipment	11F
Air ionizers	11F
Air purifiers	11F
Aircraft motors	8D
Airport cable	9D
Airport lighting	10B, D, E
Alarms	10B, D, E
Alarms, burglar	10D
Alarms, fire	10E
Alarms, intrusion	10D
Alloy conduit	7D
Alloys, brazing	12V
Alternators	8G
Aluminum conduit	7D
Aluminum EMT	7F
Aluminum fittings	7E
Anemeters	10A
Amplifiers, magnetic	3K
Analizers, circuit	10C
Analizers, motor	10C
Analizers, protective device	10C
Analizers, system	10C
Anchors, earth	1D
Anchors, pole line	1D
Anchors, wall	12K
Annunciator wire	6D
Annunciators	10B
Antenna outlets	5B
Antenna systems	10F
Appliance cord sets	6E
Appliance switches	3J
Appliance wire & cable	12E
Arbor motors	8D
Arbor presses	12J
Arc lamp transformers	12B
Arc lamps	9F
Arc lighting equipment	6C
Arc suppressors	3P
Argon lamps	9G
Armature balancers	12E
Armature banders	12E
Armature banding	12V
Armature coils	12P
Armature holders & stands	12E
Armatures	12P
Arresters, lightning	4E
Asbestos-cement conduit	7D
Asbestos insulation	12C
Asbestos tape	12S
Asbestos tubing	12T
Assemblies, multi-outlet	5B
Assembly, cable & duct	6A
Attachment caps & bases	5B
Automatic transfer switches	3C
Automotive motors	8D
Autostarters	3M
Auto-transformer starters	3M
Auto-transformers	2A, 2B
Auxiliary gutters	7A

B

Bags, tool	12A
Balancer sets	1F
Balancers, belt	1E
Ball bearings	12P
Ballast thermal protectors	4E
Ballasts, lamp	5C
Banders, armature	12E
Banding, armature	12V
Banding twine	12V
Barn wire	6D
Bars, commutator	12P
Bars, tamping	12A
Baseboard electric heaters	11A
Bases, attachment	5B
Bases, fuse cutout	4C
Bases, motor & generator	12P
Bathroom heaters	11A
Batteries	2E
Battery accessories	5C
Battery chargers	2F
Battery-operated fluorescent fixtures	9C
Battery switches	3J
Battery testers	10C
Bayonet sockets	5C
Beacons	9D
Beads, insulating	12U
Beam clamps	6G
Bearing installers & extractors	12J
Bearings, motors & generator	12P

Bed lamps	9A
Beeswax	12V
Bells	10G
Belts, safety	12W
Bench lights	9E
Benders, conduit & EMT	12C
Benders, metal	12J
Benders, strand & cable	12B
Bending gages	12C
Bending machine pumps	12C
Bevelers, pipe	12C
Bin level indicators	10B
Binding posts	6F
Bins, parts storage	12D
Bins, truck	12D
Bipost sockets	5C
Blanks, knockout	5E
Blocks, cable-pulling	12B
Blocks, connecting	6F
Blocks, fuse	4C
Blocks, terminal	6F
Blowers	11F
Blowers, portable	12J
Blown fuse alarms	10B
Bobbing, coil	12F
Bodies, conduit	7E
Bodies, cord connection	5B
Bodies, truck	1B, 12D
Boilers, steam (electric)	11C
Bolt-sealing compound	12K
Bolts, expansion	12K
Bolts, toggle	12K
Borers, earth	1B
Boring tools, hand	12J
Boundary alarms	10D
Box hardware	5E
Box-to-conduit connectors	7E
Boxes, junction—pole base	5D
Boxes, terminal—motor & generator	12P
Boxes, wiring	5D
Braces, trench	9A
Brackets, motor-mounting	12N
Brackets, transformer mounting	12A
Brackets, wall lighting	9A
Brake motors	8D
Brakes, electric	12V
Brazing alloys	12V
Brazing transformers	2B
Breakers, circuit	4D
Brewery cable	6D
Bridge cable	6D
Bridge lamps	9A
Bridge lighting	9D
Bridges, measurement	10C
Bridge rings	6G
Broken lamp-base removers	12L
Brush holders	12J
Brush plating equipment	12J
Brush seats	12E
Brushes, motor & generator	12P
Buckets, tool	12A
Buicking wire & cable	12C
Bulbs, lamp	9C
Burglar alarms	10D
Burnishers, contact	12L
Bus drop cable	6D
Busbar & supports	6H
Bushing adapters	4G
Bushings, conductor supporting	6G
Bushings, conduit	7E
Bushings, grounding	7E
Bushings, insulating	7E
Bushings, motor	12P
Bushings, sealing	7E
Bushings, strain relief	6G
Bushings, transformer	2A
Busway	7B
Buzzers	10G

C

Cab heaters	11A
Cabinet convectors	11A
Cabinets, equipment enclosing	5F
Cabinets, parts storage	12D
Cable	6A to 6E
Cable benders	12B
Cable connectors	5E, 6F
Cable drive-rings	6G
Cable-duct assembly	6A
Cable duct shields	1C
Cable, electric heating	11A
Cable hangers	1C, 6G
Cable locators	10C
Cable pay-out reels & turntables	12A
Cable racks, hangers, arms, hooks and extensions (manhole)	1C
Cable sealing compound	12V
Cable spacers	6G
Cable splices & splicing equipment	6F
Cable tags	12V
Cable ties	6G
Cable-to-box connectors	5E

Cable-to-cable connectors	6F
Cable tracers	10C
Cable trays	6G
Cable, wire & cord	6A, B, C, D, E
Cable & wire supports	1C, 6G
Cable & wire tools	12B
Cable wrapping	12F
Calling systems	10F
Cambric insulation	12Q
Canopy switches	5A
Canvases, varnished	12U
Capacitor aging testers	10C
Capacitor protective gaps	4E
Capacitors, fluorescent lamp circuit	5C
Capacitors, motor start	12P
Capacitors, power-factor correcting	3P
Caps, attachment	5B
Caps, service entrance	7E
Car heaters	12D
Car pullers	12D
Carbon brushes	12P
Carrier system controls	3K
Cartridge fuses	4B
Cartridge heaters	11C
Carts, reel	12B
Catenary supports	1D
Cathodic protection cable	6D
Cathodic protection equipment	4E
Ceiling heating cable & panels	11A
Cellophane tape	12R
Cellular-floor roadway	7C
Cellulose acetate tape	12S
Cement, commutator	12V
Cement, insulating	12U
Central furnaces, electric	11A
Central industrial control systems	3K
Centrifugal switches	3H
Chain, lighting fixture	5B
Changers, lamp	12L
Changers, transformer tap	2A
Channel, cable-supporting	6G
Chargers, battery	2F
Charging controls, battery	3J
Charge neutralizers & eliminators	12N
Cheeks, coil	12F
Chemical wire stripper	12V
Chests, tool	12D
Chime pushbuttons	3H
Chimes	10G
Church lighting	9C
Circle cutters	12M
Circuit analyzers	10C
Circuit-breaker cabinets	5F
Circuit-breaker protectors, fluorescent lamp	4E
Circuit-breaker testers	10A
Circuit breakers	10A
Circuit testers	10A
Circulating fans	11F
Clamp-on meters	10A
Clamps, beam	6G
Clamps, conduit	6D
Clamps, fuse clip	4C
Clamps, ground	6F
Clamps, wire & cable	6G
Clay conduit	7D
Clay duct, dowel pins	11A
Cleaner, fuse clip	4G
Cleaners, vacuum	12J
Cleaning compound	12V
Cleats, wire & cable	6G
Climbing equipment	12A
Clip clamps & reducers, fuse	4C
Clip cleaner, fuse	4G
Clips, cable-supporting	6G
Clips, fuse	4C
Clips, test	12L
Clock systems	3K
Closed circuit television	10F
Cloth, duck	12U
Cloth, insulating	12U
Clothing, protective	12A, 12W
Clutches, electric	12U
Coil testers	10G
Coil tools & equipment	12F
Coiled cords	6E
Coils, motor & generator	12P
Coils, solenoid & magnet	12V
Colored lamps	9C
Cold cathode lamps	9F
Cold cathode lighting fixtures	9C
Collecting rings & shoes	6F
Color-coding tape	12R
Colored lamps	9C
Commercial lighting	9C
Communication cable	6D
Communication systems	10F
Commutator bars	12P
Commutator cement	12P
Commutators	12P
Compensators, motor	3M
Compound, bolt-sealing	12K
Compound, cable sealing	12V
Compound, cleaning	12V
Compound, conduit sealing	7E

Compound, fireproofing	12V
Compound, heat-conducting	12V
Compound, impregnating	12V
Compound, insulating	12V
Compound melting pots	12J
Compound, screw-anchoring	12K
Compound, splicing	12V
Compound, waterproofing	12V
Compound, wire-pulling	12V
Compound, wire-stripping	12V
Concrete boxes	5D
Concrete floor raceway systems	7C
Concrete inserts	12K
Conditioners, air	11E
Conductor rails	6J
Conductor supporting structures (out-door)	1A
Conductor supports	6G
Conductor systems, enclosed (trolley)	7J
Conductors	6A, B, C, D, E
Conduit	7E
Conduit fittings & bodies	7D
Conduit, flexible metallic	7G
Conduit pushing pumps	12C
Conduit racks	12C
Conduit, thinwall	7E
Conduit tools	12C
Connecting blocks	6F
Connection bodies, cord	5G
Connector tools, cable	12H
Connectors, cable-to-box	5E
Connectors, cable-to-cable	5E
Connectors, conduit-to-box	7E
Connectors, ground	6F
Contact burnishers	12L
Contact resistance testers	10C
Contactors, magnetic	3M
Contactors, controller	12V
Continuity testers	10C
Continuous strip switches	3H
Control cable	6D
Control centers, motor	3M
Control panels	3D
Control switchboards	3C
Control switches	3H
Control transformers	2B
Controller contacts and fingers	12V
Controllers, drum	3M
Controllers, electric fence	3J
Controllers, motor	3M
Controls, heating	3J
Controls, motor	3M
Controls, welding	3J
Convenience outlets	3D
Converters	2D
Copper oxide rectifiers	2C
Cord connection devices	5G
Cord, flexible	6C
Cord reels	6E
Cord sets	6E
Cord switches	3H
Corona testers	10C
Corrosion-preventive tape	12R
Corrosion preventives	12V
Cotton sleeving	12T
Cotton tape	12S
Counters, revolution	10B
Counting devices	10B
Couplings, conduit	7E
Cover hooks, manhole	1C
Cover plates, fuseholder	4C
Covers, box	5E
Covers, manhole	1C
Crane cab heaters	11A
Crane controls	3J
Crane motors	8D
Crane rails	8D
Cranking motors	8D
Crimp paper tape	12S
Crossarm hardware	1D
Crossarms	1A
Current-failure alarms	10B
Current-limiting busway	7B
Current-limiting fuses	4B
Current-limiting reactors	4E
Current-limiting resistors	3F
Current-limiting transformers	7B
Cutout cabinets	5F
Cutout-operating mechanisms	3J
Cutouts, high-voltage fuse	4A
Cutouts & holders, low-voltage fuse	4C
Cutouts, thermal	4E
Cutters, circle	12M
Cutters, commutator	12E
Cutters, conduit & EMT	12C
Cutters, insulation	12G
Cutters, metal	12M
Cutters, wire & cable	12B

D

Dashpots	3H
Dating nails, pole	1D
Dead-ends	1D
Dead-front switches	3C
Decals	12N
Decorative lamp bulbs	9G
Dehumidifiers	11G
Delayed-action switches	3A
Demagnetizers	12J
Demand meters	10A
Desk lamps	9A
Detectors, fire alarm	10B
Detectors, ground	10A
Detectors, melting & outlet	10C
Dielectric heaters	11C
Dielectric testers	10C
Dies, conduit threading	12C
Diesel generators	8F
Diffusers, lighting	9H
Diggers, pole-hole	12A
Dimmers, lamp	3J
Dinkies, pole	1B
Directional signs	9C
Discharge lamps	9F
Disconnect sticks	12A
Disconnect switches	3M
Disconnect-type hangars	5G

Display lighting	9C
Display turntables	12N
Disposal units, lamp	12J
Distribution panels	3D
Distichers	1B
Doctors' regulators	10F
Door & gate openers	3J
Door switches	5A
Doorbell pushbuttons	3H
Doormat switches	3H
Dowel pins, clay	1C
Drilling tools	12M
Drip-proof motors	8C
Drive-in theater car heaters	11A
Drive-rings, cable	6G
Drivers, wedge	12G
Drives, power	12C
Drives, variable speed	8J
Driveway lights	9A
Drum heaters	11C
Drum switches & controllers	3E
Dry cells	3E
Dryer cords	6E
Dryer receptacles	5B
Duck cloth	12U
Duct-cable assemblies	12C
Duct heaters, electric	11A
Duct pins	1C
Duct rodding equipment	12C
Duct shields	1C
Duct, trolley	7H
Duct, underfloor	7K
Duct, wiring	7D
Dummy fuse plugs	4C
Dust-tight lighting fixtures	9C
Dynamic balancers	12E
Dynamometers	11A
Dynamos	8G
Dynamotors	8G

E

EMT	7F
EMT fittings	7E
Earth boring trucks	1B
Ebony	12U
Eddies, insulation	3J
Elapsed-time indicators	12B
Elbows, conduit	7E
Electric brakes	12L
Electric drills	12M
Electric fence controllers	3J
Electric fence wire	6D
Electric furnace cable	6D
Electric furnaces	11C
Electric heating equipment	11A, B, C
Electric lock	3K
Electric metallic tubing	7F
Electric ovens	11C
Electric plants	8F
Electric process heaters	11C
Electric saws	12M
Electric space heaters	11A
Electric steam boilers	11C
Electrical tape	12R
Electrodes	12V
Electroluminescent panels	9J
Electrolysis meters	10A
Electromagnets	3K
Electronic relays	3N
Electroplating controls	3J
Electroplating devices	12J
Electrostatic meters	10A
Elements, heating	6D
Elevator cable	8D
Elevator motors	8D
Eliminators, static	12N
Emergency generators	8F
Emergency lighting equipment	9C, 9E
Encapsulated motors	8C
Encapsulating kits	12U
Enclosures, metal	3E, 5F
Enclosures, trolley wire	5F
End seals, cable	1F
Ends, lead	11C
Engine heaters	8F
Engine-powered generators	8F
Engravers	12J
Enlargers, conduit	7E
Entrance heads & hardware	7E
Environment-resistant components	6F
Equipment switches	3J
Estimating services	12X
Etchers	12J
Excitation busway	7B
Exciters	8H
Exhaust fans	11F
Exit lights	9C
Expansion bolts, shields & anchors	12K
Expansion fittings, conduit	7E
Experimental switchboards	3D
Explosion-proof boxes	5D
Explosion-proof circuit breakers	4D
Explosion-proof fittings	7E
Explosion-proof hand lamps	9E
Explosion-proof heaters	11A
Explosion-proof lighting	9C
Explosion-proof limit switches	3H
Explosion-proof motors	8C
Explosion-proof panelboards	3D
Explosion-proof plugs & receptacles	5B
Explosion-proof starters	3G
Explosion-proof switches	3E
Explosion-proof unions	5E
Extension cord reels	6E
Extension cords	6E
Extension cords with lamps	9E
Extractors, gear & bearing	12J
Eyeshields	12W

F

Face shields	12W
Fan motors	8D
Fans	11F
Fans & lighting fixtures, combined	11F
Fasteners & fastening devices	12K
Fault indicators	10B

Fault locators	10C
Fence alarms	10D
Fence controllers	3J
Fiber conduit	7D
Fiber & fiberboard insulation	12Q
Fiber-glass conduit	7D
Fiber-glass tape	12S
Fiber sleeving & tubing	12T
Field discharge switches	3K
Fields, stator & armature	12P
Filament lamps	9G
Files, slot	12E
Fingers, controller	12V
Fire alarm detectors	10B
Fire alarms	10E
Fireproofing compound	12V
Fish paper	12Q
Fish tape or wire	12E
Fittings, conduit	7E
Fittings, expansion	7E
Fittings, service entrance	7E
Fittings, weatherproof	5B
Fixture hangers & supports	5B
Fixture supports & raceway, combined	7H
Fixture wire	6B, 6D
Flood lighting	9A to 9C
Flame safeguard equipment	3K
Flashers & controls	12H
Flexible cord	6C
Flexible metallic conduit	7G
Flexible metallic conduit fittings	7E
Flexible shafts	12T
Flexible sleeving	12T
Float switches	3H
Floodlights	9D
Floodlights, garden	9A
Floor meters	11A
Floor furnaces	11A
Floor heating cable	11A
Floor insert heaters	11A
Floor lamps	9A
Floor mats, heated	12A
Floor outlet nozzles	5E
Floor raceway systems	7C, 7K
Floors, adjustable	7C
Flow switches	3H
Fluorescent circuit protectors	4F
Fluorescent lamp hangers	12L
Fluorescent lamp disposal units	12J
Fluorescent lamps	9F
Fluorescent unit testers	10C
Flux, soldering & welding	12V
Fluxmeters	10A
Folders, insulation	12C
Foot switches	3H
Footmat switches	3H
Forced-air heaters, electric	11A
Furnaces, electric space heating	11A
Furnaces, industrial electric	11A
Fuse accessories	4C
Fuse adapter removers	4C
Fuse alarms & indicators	10B
Fuse cabinets	5F
Fuse clip cleaners	4C
Fuse cutouts, blocks & holders	4C
Fuse cutouts, high voltage	4A
Fuse pullers	12L
Fused quartz	12U
Fuses & plugs	5B
Fuseholder cover plates	4B
Fuses	4B

G

Gages, air gap	12E
Gages, wire	12H
Galvanometers	10A
Gap gages	12E
Garden lights	9A
Gas tube sign cable	6D
Gas-turbine generators	8F
Gaseous-discharge lamps	9F
Gaskets, conduit fitting	7E
Gasoline-engine-driven generating sets	8P
Gate & door openers	3J
Gear installers & extractors	12J
Generators	8D
Generating sets	8F
Generator controls	3J
Generator mountings	12N
Generator replacement parts	12P
Generators	8G
Germanium rectifiers	9C
Gimbal rings	12A
Gins, transformer	12A
Glass fiber insulation	12Q
Glass fiber tape	12S
Glass tube fuses	9E
Glassware, lighting	9B
Glow lamps	9F
Glue pots	12J
Goggles	12W
Gongs	10G
Goonsecks	10E
Graphite	12V
Grapples, conduit tool	12C
Grinders, commutator	12E
Grips, cable-pulling	12B
Grips, cable-supporting	12B
Grips, fish tape	12B
Ground clamps	6F
Ground detectors	10B
Ground resistance testers	10C

Ground rods	4E
Ground wire	6D
Ground wire molding	7H
Grounding adapters, cord-connecting	5B
Grounding bushings	7E
Grounding equipment, pole line	1D, 12A
Grounding rods	6E
Grounding transformers	2B
Growlers	10C
Guard rails, manhole	1C
Guards, conduit thread	7E
Guards, lamp	5C
Guards, trouble light	9E
Guides, cable & wire pull-in	12B
Guns, soldering	12H
Guns, staple	12B
Guns, wire installation	12B
Gutters, auxiliary	7A
Guys—pole line	1D

H

Hammer-actuated tool fasteners	12K
Hammers, electricians	12L
Hammers, power-driven	12M
Hand lamps	9E
Hand tools	12L
Hand trucks	12D
Handles, trouble light	9E
Hangers, box	1D
Hangers, cable	1C, 6G
Hangers, conduit	7E
Hangers, lighting fixture	5B
Hangers, manhole cable	1C
Hardware, box	5E
Hardware, pole & crossarm	1D
Harnesses, safety	12W
Heads, coil	12F
Heads, service entrance	7E
Heat-conducting compounds	12V
Heat pumps	11H
Heated floor mats	11A
Heater wire & cable	6D
Heaters, electric space	11A
Heaters & lighting fixtures, combined	11A
Heaters, soldering gun or iron	12H
Heating cable	11A, 11C
Heating controls	3J
Heating elements & devices	11C
Heating transformers	12H
Heavy-duty switches	2H
Hermite motors	8C
Hickeys, box	5E
Hickeys, conduit & EMT	12C
High-bay lighting	9C
High-frequency busway	7B
High-frequency cable	9C
High-frequency generators	8E
High-frequency motors	8B
High-voltage test meters	10A
Highway lighting	9D
Hoist motors	8D
Hoisting equipment, pole line	12A
Holsts	12D
Holders, armature	12E
Holders, brush	12E
Holders, fuse	12C
Holders, lamp	5C
Holders, lamp, industrial	5E
Holders, soldering gun & tool	12H
Hole saws	12A, 12L
Hoods, range	12N
Hooks, lacing	12F
Hooks, manhole cover	1C
Horns	10G
Hospital signale	10F
Hot line tools	12A
Hot water baseboard heaters	11A
Hotplates, industrial	11C
House numbers, illuminated	9A
Housings & cabinets	5F
Humidifiers	11G

I

Identification nameplates	12J
Ignition transformers	2B
Illuminated house numbers	9A
Illuminated magnifiers	9E
Immersion heaters	11C
Impact wrenches	12L
Impregnating compound	12V
Impregnators, coil	12D
In-and-out registers	10F
Incanescent lamp changers	12L
Incanescent lamps	9C
Indicators, conduit fitting	12C
Indicating & pilot lights	9C
Indicators	10B
Induced draft fans	11F
Induction heaters	11C
Induction motors	8D
Industrial control systems	8K
Industrial lift trucks	12D
Industrial lighting	9C
Industrial plugs & receptacles	5B
Industrial television	10F
Infrared detector controls	3K
Infrared heaters	11C
Infrared lamps	9G
Infrared spot heaters	11A
Insect-repellent lamps	9G
Inserts, concrete	12K
Inserts, threaded	12K
Inspection lights	9E
Installers, gear & bearing	12J
Institutional lighting	9C
Instrument motors	8D
Instrument transformers	2B
Instruments, indicating	10A
Insulating bushings	7E
Insulating cement	12U
Insulating compounds	12D
Insulating materials	12Q to 12U
Insulating paint	12U

Insulating putty	12U
Insulation products, porcelain	12U
Insulation testers	10C
Insulation tools	12G
Insulators, interior wiring	6G
Insulators, pole line	1D
Intercom systems	10F
Interlocks	3K
Interval timers	3H
Intrusion alarms	10D
Inverters	2D
Ionizers, air	11F
Irons, pulling-in	1C
Irons, soldering	12H
Isolating shock mounts	12N
Isolating switches	3G
Isolating transformers	2B

J

Jacks, cable-pulling	12B
Jacks & jack screws	12D
Jacks, pole line	12A
Joinable, insulated	12B
Junction boxes	5D
Junction boxes, pole base	5D

K

Kettles, melting	12J
Kilowatt-hour meters	3H, 5A
Kits, cable-splicing	10A
Kits, motor encapsulating	12U
Knife switches	3G
Knives, cable sheath-splitting	12B
Knobs, wire & cable	6G
Knockout blanks	12C
Knockout punches	12C
Kraft paper	12Q
Kva meters	10A

L

Labels, adhesive	12N
Laboratory switchboards	3C
Lacing hooks	12D
Lacing twine	12V
Ladders	12A, 12D
Ladders, conductor-supporting	6F
Ladders, manhole	1C
Lamp accessories	12L
Lamp-base removers	12L
Lamp bulbs	9G
Lamp changers	12L
Lamp dimmers	3J
Lamp disposal	12B
Lamp-failure indicators	10B
Lamp holders & spreaders, industrial	5E
Lamp sockets & holders	5C
Lamp wire	6D
Lamps, floor and table	9A
Lamps, fluorescent	9F
Lamps, incandescent	9G
Lamps, portable	9A, 9E
Lamps, trouble	9E
Lanterns, post	9A
Lead splicing sleeve	12C
Lead wire	6D
Leaders, fish tape	12B
Leads, test	12L
Leads, water-cooled	6D
Level-indicating systems	10F
Level indicators	10K
Lift & towers, mobile	1B
Lift trucks	12D
Lifting magnet connectors	6F
Lifts, wire reeling	12B
Light dimmers	3J
Light meters	10A
Lighting fixtures	9A to 9E
Lighting fixtures & fans, combined	11F
Lighting fixtures & heaters, combined	11A
Lighting glassware, louvers & reflectors	9H
Lighting standards	9D
Lighting protective equipment	4E
Lights, night	9A
Limit switches	3H
Line hardware	1D
Line splices	1D
Line trucks	1B
Linemen's protective clothing	12A
Linemen's tools	12A
Links, high-voltage fuse cutout	4A
Links, renewable fuse	4C
Liquid-flow-activated switches	3H
Liquid-flow indicators & alarms	10B
Liquid-level alarms	10B
Liquid-level switches	10B
Liquid-tight flexible metallic conduit	7G
Litz cable	6D
Load centers	3M
Load indicators	10B
Load resistors	3P
Loading transformers	2B
Locator systems	10F
Locators, ground	10C
Locators, metal & outlet	10C
Locking-type taps & receptacles	5B
Locknuts, conduit	12U
Locks, lamp	5C
Loom	7D
Louvers, lighting fixture	9H
Low-resistance testers	10C
Low-voltage control systems	7L
Lubricant, thread	12V
Lubricant, wire-pulling	12V
Lugs, wire & cable	6F
Lumiline cap switches	5A
Lumiline lamp holders	5C
Luminaires	9A to 9D
Luminous ceilings	9A, 9C

M

Machine accessories	12M
Machine lights	5E
Machine process controls	3K
Machine tool cable	6D
Machine tool transformers	2B
Machines, soldering	12H
Magnet coils	12V
Magnet generators	8E
Magnet wire	6D
Magnetic amplifiers	3K
Magnetic brakes	3K
Magnetic contactors & starters	3M
Magnetizers	12J
Magnetos	10C
Magnets, permanent	3K
Magnifiers, illuminated	9E
Maintenance trucks	12D
Mandrels, conduit	12C
Manhole equipment	1C
Manual starters	3M
Marine lighting	9D
Marine motors	8D
Marine wire & cable	6D
Markers, conduit	7E
Markers, pole	1D
Markers, wire & cable	12V
Masking tape	12R
Masks, face protective	12W
Masonry anchors	12K
Masonry drills	12M
Master antenna systems	10F
Masts, service entrance	7E
Mat-operated switches	3H
Material pricing service	12X
Materials handling equipment	12D
Mats, floor, heated	11A
Mats, snow-melting	11C
Mats, switchboard	12U
Measurers, conduit	6D
Measurers, wire	12B
Mechanical rectifiers	2C
Mechanisms, switch-operating	3J
Melting pots	12J
Mercury control switches	3H
Mercury light switches	3A
Mercury-turbine generators	8F
Mercury-vapor fixtures	9C
Mercury-vapor lamps	9F
Metal benders	12J
Metal cutters & shears	12M
Metal locators	10C
Metallizers	12J
Meter cabinets	5F
Meter seals	12V
Motor sockets & mountings	5H
Motor testers	10A
Metering & control switchboards	3C
Meters	10A
M-G sets	8F
Mica insulation	12Q
Miniature lamps	9G
Miniature relays	3N
Miniature switches	3H
Mining machine motors	8D
Mobile towers	1B
Mobile transformers	9E
Mobile working lights	9E
Molded-integral cord sets	6E
Molding, ground wire	7H
Momentary-contact switches	5A
Motor analyzing kits	12U
Motor balancers	12E
Motor brushes	12P
Motor control centers	3M
Motor controls	3M
Motor encapsulating kits	12U
Motor-generators	8F
Motor mountings	12N
Motor oils	12J
Motor overload protectors	4E
Motor replacement parts	12P
Motor single-phasing protection	4E
Motor speed controls	3M
Motor-starting capacitors	12P
Motor-starting relays	3N
Motor starters	8A to 8D
Mounting brackets, transformers	2A
Mountings, meter	5H
Mountings, motor	12N
Mounts, shock-isolating	12N
Multi-outlet assemblies	5B

N

Nails, pole-dating	1D
Nameplate stamping machines	12J
Nameplates	10B
NEC cable designations	6A, B, C
Neon lamps	9G
Neon testers	10C
Network protectors	12N
Neutralizers, static charge	12N
Night lights	9A
Nipples, conduit	7E
Non-metallic boxes	5D
Non-metallic conduit	5D
Nozzles, floor outlet	5E
Nurses' call systems	10F
Nuts, wire	6F

O

Obstruction lighting	9D
Ohmmeters	10A
Ohmme	12D
Oil burner motors	8D
Oil burner switches	5A

Oil fuse cutouts.....	4A
Oil switches.....	3G
Oilers, motor.....	12N
Outlight pushbutton stations.....	3M
Open-link fuses.....	4B
Openers, door & gate.....	3J
Ornamental lighting.....	9C
Oscilloscopes.....	10C
Outdoor lighting.....	9A, 9D
Outlet boxes.....	5D
Outlet locators.....	10C
Outlet nozzles, floor.....	5E
Outlets, convenience.....	5B
Outlets, television antenna.....	5B
Outlets, weatherproof.....	5B
Ovens, electric.....	11C
Overload protectors, ballast.....	4E
Overload protectors, motor.....	4E

P

PAR lamps.....	9G
Pad plating equipment.....	12J
Parking systems.....	10F
Paint, insulating.....	12U
Panelboard cabinets.....	5F
Panelboards.....	3D
Panels, distribution.....	3D
Panels, electric heating.....	11A
Panels, electroluminescent.....	9A
Panels, lighting fixture.....	9H
Panels, service entrance.....	12U
Paper insulation.....	12Q, 12U
Parking lot lighting.....	12D
Parkway cable.....	6D
Parts storage equipment.....	12D
Paste, soldering.....	12V
Pathway lights.....	9A
Patio lights.....	9A
Peak load control.....	3K
Peak load indicators.....	10B
Pencils, soldering.....	12H
Pendant switches.....	5A
Permanent magnets.....	3K
Phase angle meters.....	10A
Phase converters.....	2D
Phase sequence indicators.....	10B
Phase-shifting transformers.....	2B
Photoelectric controls.....	3H
Photoelectric indicators & alarms.....	10B
Photographic (arc) lighting.....	9C
Pickups, conduit tool.....	12C
Pike poles.....	12A
Pilot light assemblies.....	9C
Pins, clay duct.....	1C
Pipe bevelers.....	12C
Pipe-heating cable.....	11C
Pipe pushers.....	12C
Pipe-thawing transformers.....	2H
Pipe vises.....	12C
Plants, power-generating.....	8F
Plastic-coated conduit.....	7D
Plastic-coated EMT.....	7F
Plastic conduit.....	7D
Plastic conduit fittings.....	7E
Plastic insulation.....	12Q
Plastic sleeving.....	12T
Plastic tape.....	12R
Platers.....	12J
Platers, furnace cover.....	4C
Platers, switch & outlet box.....	4E
Platforms, pole.....	1D
Platforms, work.....	12D
Plating equipment.....	12J
Plugs, electricians'.....	12L
Plug fuses.....	4B
Plug-in busway.....	7B
Plugs, attachment.....	5B
Plugs, conduit-sealing.....	7E
Plugs, dummy fuse.....	4C
Plugs, fused.....	5B
Plugs, knockout.....	5E
Polarity testers.....	10C
Pole base boxes.....	5D
Pole equipment.....	1D
Pole-hole diggers.....	1B, 12A
Pole jacks.....	12A
Pole-setting trucks.....	1B
Poles, lighting.....	9D
Poles, pike.....	12A
Poles, power line.....	1A
Poles, street lighting.....	3D
Polyester film insulation.....	12Q
Polyester tapes.....	12S
Polyethylene tapes.....	12S
Polyphase motors.....	3B
Porcelain insulating products.....	12U
Portable air conditioners.....	11E
Portable blowers.....	12J
Portable cord sets.....	6E
Portable electric heaters.....	11A
Portable electric saws & drills.....	12M
Portable emergency lighting.....	9E
Portable fans.....	11F
Portable heavy-duty switches.....	3H
Portable lamps.....	9A, 3E
Portable power cable.....	6D
Post lanterns.....	9A
Post lights.....	9A
Posts, binding.....	6F
Potential devices.....	10A
Potentiometers.....	6F
Potheads.....	6F
Pots—molding, glue & compound.....	12J
Pots, solder.....	12H
Pouches, tool.....	12A, 12K
Powder-actuated fastening tools.....	12K
Powder plating equipment.....	12J
Power connectors.....	6F
Power cord switches.....	3H
Power drives.....	12C
Power factor capacitors.....	3P
Power factor meters.....	9A
Power generating sets.....	10A
Power supplies.....	2H

Power switches.....	3G
Power tool motors.....	3D
Power tools.....	12M
Power wire & cable.....	6A
Preheaters, wire.....	11C
Preservative, wood.....	12V
Press motors.....	8D
Pressboard.....	12Q
Presses, arbor.....	12J
Pressure-connector tools.....	12B
Pressure connectors.....	6F
Pressure-contact power switches.....	3G
Pressure-sensitive tape.....	12R
Pressure sequence controls.....	3H
Pressure switches.....	3H
Preventives, rust & corrosion.....	12V
Pricing service.....	12X
Primary batteries.....	2E
Primary switches.....	3P
Private telephone systems.....	10F
Process controls.....	3K
Program clock systems.....	3K
Protection, cathodic.....	4E
Protective clothing.....	12A, 12C
Protective device analyzers.....	10C
Protective enclosures, trolley wire.....	5F
Protective equipment (clothing).....	12W
Protective equipment (electrical).....	4A to 4E
Protective gaps, capacitor.....	4E
Protective relays.....	3N
Protectors, ballast.....	4E
Protectors, motor overload.....	4E
Protectors, network.....	4E
Protectors, single-phasing.....	4E
Protectors, surge.....	4E
Proximity controls and switches.....	3H
Pruners, tree.....	12A
Public address systems.....	10F
Public building lighting.....	9C
Pull boxes.....	5D
Pull-in guides, cable & wire.....	12B
Pullers, cable.....	12B
Pullers, car.....	12D
Pullers, fish tape.....	12B
Pullers, fuse.....	12L
Pullleys, cable-pulling.....	12B
Pulling compound, wire.....	12V
Pulling elbows.....	7E
Pulling-in irons.....	1C
Pump cable.....	6D
Pump controls.....	3J
Pump motors.....	8D
Pumps, bending & pushing.....	12C
Pumps, heat.....	11B
Pumps, manhole.....	1C
Punches, knockout.....	12C
Purifiers, air.....	11F
Pushbutton stations.....	3M
Pushbutton switches.....	5C
Pushbutton switches, industrial.....	3H
Pushbuttons, door chime.....	3H
Pushers, pipe.....	12C

Q

Quartz, fused.....	12U
Quartz-lamp holders.....	5C
Quartz lamps.....	9G

R

Raceway.....	7A to 7L
Raceway & fixture supports, combined.....	7H
Raceway tools.....	12C
Racks, cable.....	1C, 6G
Racks, conduit.....	13C
Radiators, steam electric.....	11A
Radiators, transformer.....	2A
Radio systems, 2-way.....	10F
Radioisotope-excited light sources.....	7H
Rails, crane.....	6J
Rails, manhole guard.....	6H
Railway cable.....	6D
Railway motors.....	8D
Range cords.....	6E
Range hoods.....	11F
Range receptacles.....	5B
Reactors, saturable.....	3K
Reamers, conduit.....	12C
Receptacles.....	5B
Rechargeable dry cells.....	2E
Rechargeable hand lamps.....	9E
Recording-type meters.....	10A
Rectifiers.....	2C
Rectifying transformers.....	2B
Reducers, fuse clip.....	4C
Reducers, lamp socket.....	5C
Reducing washers.....	5E
Reel lifts, wire.....	12B
Reel-type trouble lamps.....	9E
Reels, cable.....	12B
Reels, extension cord.....	6E
Reels, fish tape.....	12B
Reels, static grounding.....	6E
Reflector-flood lamps.....	9G
Reflectors, lighting fixture.....	9H
Registers, in-and-out.....	10P
Regulators, motor speed.....	3M
Regulators, voltage.....	3P
Relay testers.....	10C
Relays.....	3N
Remote control cords.....	6E
Remote control switches.....	3H

Removers, broken lamp-base.....	12L
Removers, fuse adapter.....	4C
Removers, wedge.....	12M
Residential lighting.....	9A
Resistance testers.....	10C
Resistors, dc fluorescent circuit.....	5C
Resistors, load.....	3P
Respirators.....	12W
Resurfacers, commutator.....	12E
Retracting cords.....	6E
Revolution counters.....	10B
Rheostats.....	3P
Rigid conduit.....	7D
Rings, collecting.....	6P
Rings, commutator.....	12P
Rings, drive & bridle.....	6G
Rings, gimbal.....	9H
Rings, slip.....	12P
Rippers & strippers, wire.....	12B
Rocker-type switches.....	5A
Rodding equipment.....	12C
Rods, armour.....	1D
Rods, ground.....	4E
Rods, insulation.....	12Q
Rolling stock, pole line.....	1H
Rotary converters.....	2D
Rotary relays.....	3N
Rotary switches.....	5A
Rotary switches, industrial.....	3K
Rubber tape.....	12P
Rubber tubing.....	7E
Running-thread, conduit.....	12T
Rust-preventives.....	12V

S

Safety belts & harnesses.....	12W
Safety grounding equipment.....	12A
Safety switches.....	3G
Sanitary motors.....	8D
Saturable reactors.....	3K
Saws, commutator.....	12E
Saws, hole.....	12M
Saws, portable electric.....	12M
Scaffolding.....	12D
Scissors, electricians'.....	12L
Scrapers, slot.....	12C
Screw-anchoring compounds.....	12K
Screw-on wire connectors.....	6F
Screw sockets.....	5C
Screwdrivers, electricians'.....	12L
Sealed beam lamps.....	12D
Sealing compound, bolt.....	12K
Sealing compound, cable.....	12V
Sealing compound, conduit.....	7E
Sealing services.....	12K
Seals, cable end.....	6F
Seals, conduit.....	7E
Seals, equipment.....	12K
Seals, meter.....	12V
Searchlights.....	9D
Seaters, brush.....	12E
Secondary batteries.....	2E
Selenium rectifiers.....	2C
Self-coiling cords.....	6E
Series street-lighting cable.....	6D
Series street-lighting lamps.....	9G
Service entrance & drop cable.....	6D
Service entrance hardware.....	7E
Service entrance panels.....	3D
Service entrance switches.....	3G
Service estimating & pricing.....	12X
Service station lighting.....	3D
Servo components.....	3K
Setters, pole.....	1B
Sets, balancing.....	8F
Sets, generating.....	8F
Sets, M-4.....	8F
Sewing machine motors.....	8D
Shaft-motion indicators.....	10B
Shafts, flexible.....	12P
Shafts, metal.....	12M
Sheet insulation.....	12Q
Shell-type motors.....	8D
Shelving, parts storage.....	12D
Shields, cable.....	1C
Shields, expansion.....	12K
Shields, face protective.....	12W
Shields, manhole.....	1C
Shifters, phase.....	2D
Shima, motor & generator.....	12P
Shock-isolating mounts.....	12N
Shock-resistant lamps.....	12E
Shoes, collecting.....	6F
Showcase lighting.....	9C
Sidewalk boxes.....	5D
Sign cable, gas tube.....	6D
Sign lighting.....	6D
Signal & communication cable.....	6D
Signal equipment.....	10F
Signaling transformers.....	2B
Signs, lighted display.....	9C
Single-type switches.....	5A
Silicon rectifiers.....	2C
Silicone insulation.....	12Q
Silicone sleeving.....	12T
Silicone tape.....	12S
Slk insulation.....	12Q
Single-phase motors.....	8E
Single-phasing protection.....	4E
Sirens.....	10G
Slate, electrical.....	12U
Sleeving, flexible.....	12T
Slicing, lead splicing.....	6F
Slip rings, motor & generator.....	12P
Slot scrapers & files.....	12E
Slot wedges & sticks.....	12V
Smoke alarms.....	10B
Snap-around meters.....	10A
Snap switches.....	3H

Snow-melting cable	11C
Snow-melting mats	11C
Soapstone conduit	1D
Socket accessories	6C
Sockets, lamp	6C
Sockets, lamp starter	6C
Sockets, meter	5H
Sodium-vapor fixtures	9C
Sodium-vapor lamps	9F
Soil-heating cable	11C
Solder	12V
Soldering equipment	12H
Soldering flux & paste	12V
Soldering transformers	12B
Solderless connectors	6F
Solenoid coils	12V
Solenoid-operated brakes	3K
Solenoid valves	3K
Solenoids	3K
Sound-level indicators	10B
Sound-powered telephones	10F
Sound systems	10F
Sounding devices	10G
Space heaters, electric	11A
Spacers, cable	6G
Speed regulators & controls	3M
Splash-proof motors	8C
Splices & kits	12V
Splicing compound	12V
Splicing equipment	6F
Splicing tools	12B
Split-tinned connectors	6F
Spotlights	9D
Sprayers	12J
Spreaders, coil	12D
Spreaders, lamp	10B
Sprinkler alarms	10B
Stage lighting	9C
Stage lighting cable	6D
Stage switchboards	3C
Stair tread lights	9A
Stamping machines, nameplate	12J
Standards, lighting	9D
Standards, armature	12E
Stands, pipe vise	12C
Stands, soldering	12H
Stands, with cable	12B
Staplers, wire	12B
Staples, cable	6G
Star drills	12M
Starter sockets	5C
Starters, fluorescent lamp	5C
Starters, motor	3M
Static balancers	12E
Static controls	3K
Static converters	2D
Static-discharge grounding reels	6E
Static electricity indicators and alarms	10B
Static neutralizers & eliminators	12N
Stations, pushbutton	3M
Stator fields	12E
Steam boilers (electric)	11C
Steam-powered generators	3F
Steam radiators, electric	11A
Stepping motors	8D
Stepping switches	3K
Sticks, manhole	1C
Sticks, disconnect	12A
Sticks, slot	12P
Stocks, conduit threading	12C
Stones, commutator	12E
Storage batteries	2E
Storage equipment	12E
Strain-relief bushings	3G
Strand benders	12B
Straps, cable	6G
Straps, conduit	7E
Street lighting	9D
Street-lighting cables	6D
Street-lighting controls	3J
Street-lighting lamps	9G
Street-lighting transformers	2B
Stringing equipment, wire	12A
Strip heaters	11C
Strip, removed	11C
Strip switches, continuous	3H
Strippers, wire	12B
Stripping compound, wire	12V
Stroboscopes	10C
Structure, cable-supporting	6C
Stud and pin fastening device	12K
Studs, lighting fixture box	5E
Submarine cable	6D
Submersible boxes	5D
Submersible motors	8C
Subminiature controls and switches	3H
Substations, unit	3A
Suburban cable	6D
Supports, box	5E
Supports, busbar	6H
Supports, catenary	1D
Supports, conductor	6G
Supports, conduit	7E
Supports, lighting fixture	5G, 9H
Supports, lighting fixture & raceway combined	7H
Suppressors, arc	5F
Surface raceway	7H
Surge protectors	4E
Swimming pool heaters	11C
Switch boxes	5D
Switch cables	5F
Switch-operating mechanisms	12J
Switchboard mats	12U
Switchboards	3C
Switches, disconnect	3M
Switches, drum	3M
Switches, explosion-proof	3C
Switches, field discharge	3K
Switches, power transformers	3G
Switches, primary	3F
Switches, rotary, industrial	5K
Switches, wiring device	5A
Switchgear	3B
Switching systems, low-voltage	3L
Switchplates	5E
Synchronous converters	2D
Synchronous motors	8B
Synchroscopes	10B
System analyzers	10C

T

T-bars, lighting fixture	9H
Table lamps	9A
Tachometers	10A
Tags, wire & cable	12V
Takeoffs, power	12C
Tampers, coil	12D
Tamping bars	12A
Tanks, melting	12J
Tanks, transformer	2A
Tap-changing equipment	2A
Tap-changing transformers	2B
Tap switches	5A
Tape	12R, 12S
Tape, fish	12H
Tape, heating	11C
Tapers, coil	12F
Taps, cord-connecting	5B
Taps, fused	5B
Telephone systems	10F
Television/ac combination outlets	5H
Television antenna outlets	5B
Television, industrial & commercial	10F
Temperature controls	3J
Temperature indicators	10H
Temperature sequence controls	3H
Temporary power connectors	6F
Tents, manhole	1C
Terminal blocks	12P
Terminal boxes, motor & generator	12P
Terminals, wire & cable	6F
Terminators, cable	6F
Test leads & clips	12C
Testing instruments	10C
Textile motors	8D
Thawing transformers	2H
Theater switchboards	3C
Thermal lamp starters	5C
Thermal overload devices	4E
Thermal protectors, ballast	4E
Thermistors	3P
Thermostat wire & cable	6D
Thermostats	3J
Thinwall conduit	12B
Thread guards, conduit	7E
Thread lubricant	12V
Threaded inserts	12K
Threaders, conduit	12C
Through-cord switches	6C
Ties, cable	6G
Time-delay fuses	4B
Time switches & timers	3H
Timing motors	8D
Timing & time-delay relays	8D
Toggle bolts	12K
Toggle switches	5A
Toggle switches, industrial	3H
Tonges, pole	12A
Tool bags & holders	12L
Tool chests	12L
Tool motors	8D
Tool pickups & grapples	12C
Tool pouches, buckets & bags	12A, 12L
Tools, armature & stator repair	12E
Tools, cable & wire	12P
Tools, coil	12P
Tools, hand	12L
Tools, insulation	12G
Tools, linemen's	12A
Tools, portable electric	12M
Tools, fastening	12K
Tools, raceway	12C
Tools, shop—miscellaneous	12J
Tools, soldering	12H
Torches, soldering	12H
Torque wrenches	12A
Totally enclosed motors	8C
Towers, conductor-supporting	1A
Towers, floodlighting	9D
Towers, mobile construction	1B
Towers, work	12P
Tracers, cable	12C
Traffic signal lamps	9G
Traffic signals	9D
Trailer cable	6D
Trailer park panels	3D
Trailers, office & workshop	12L
Trailers, pole	1B
Transfer switches	3G
Transformer bushings	2A
Transformer cabinets	5F
Transformer gins	12A
Transformer mounting brackets	2A
Transformer radiators	2A
Transformer tap-changing equipment	2A
Transformers	2A, 2B
Transistorized telephones	10F
Trays, cable-supporting	6C
Tree & trimmers & pruners	12A
Trench braces	1C
Trenchers	1B
Trenching tools, hand	12A
Trimmers, tree	12A
Trolley duct	7B
Trolley wire	6D
Trolley wire protective enclosures	5F
Trouble lamps	9E
Troughs, cable-supporting	6G
Troughs & mountings, meter	5F
Truck bodies	1B, 12D
Trucks, construction	1B
Trucks, hand	12D
Trucks, lift	12D
Trucks, maintenance	12D
Tube-to-cable connectors	6F
Tubes, fluorescent	9F
Tubes, lighting (standards)	9D
Tubing, electric metallic	7F
Tubing, flexible	12T
Tubing, insulation	12Q
Tumbler switches	5A
Turbine-powered generators	8F
Turners, paper	12G
Turns-ratio testers	10C
Turntables, cable	12A
Turntables, display	12N

Twine, banding & lacing	12M
Twisters, wire	12B
Two-way radio systems	10F

U

Ultra-violet lamps	9G
Ultra-violet display lighting	9C
Ultra-violet garden lighting	9A
Undercutters, armature	12E
Underfloor duct	7K
Underground boxes	5D
Underwater lighting	9D
Unions, explosion-proof	5E
Unit heaters, electric	11A
Unit substations	3A

V

Vacuum cleaners	12J
Vacuum switches	3H
Valves, electrically operated	5D
Vaporproof boxes	5D
Vaporproof circuit breakers	4D
Vaporproof hand lamps	9E
Vaporproof lighting fixtures	9C
Variable-speed drives	8J
Variable voltage transformers	2B
Varistors	3P
Varmeters	10A
Varnish	12U
Varnished cambric tape	12H
Varnished canvas	12U
Varnished insulation	12Q
Ventilating equipment	11F
Ventilators, manhole	1C
Vertical motors	8D
Vibration-isolating mounts	12N
Vibration meters	10A
Vises, pipe	12C
Volt-ammeters	10A
Voltage-regulating transformers	2B
Voltage regulators	3P
Voltage testers	10A
Voltmeters	10A
Vulcanizing equipment	12B

W

Wall air conditioners	11E
Wall anchors	12K
Wall plates	5E
Warning lights	9C
Washers, reducing	5E
Water-cooled leads	9A, 9F
Waterproofing compound	12V
Wattmeters	10A
Weatherproof boxes	5B, 5D
Weatherproof cabinets	5F
Weatherproof signs & plates	5E
Weatherproof lighting	9A, 9F
Weatherproof motors	8C
Weatherproof outlets	5B
Weatherproof sockets	5C
Weatherproof switches	5A
Wedge drivers & removers	12M
Wedges, slot	12M
Welders	12J
Welding controls	3J
Welding flux	12M
Welding transformers	2B
Welding-type cable connectors	6F
Welding wire	12V
Whistles	10G
Winches	12D
Winches, cable-pulling	12B
Winders, coil	12L
Windings, motor & generator	12P
Window air conditioners	11E
Wire cable & cords	6A, 6B, 6C, 6D, 6E
Wire & cable compounds	12M
Wire & cable reels	12B
Wire & cable supports	6G
Wire & cable tools	12B
Wire, fish	12B
Wire-installation guns	12B
Wire preheaters	11C
Wire-stripping equipment	12A
Wire & strip, fuse	4C
Wire strippers	12B
Wire-stripping compound	12M
Wire tags & markers	12M
Wireholders, pole line	1D
Wireways	7L
Wiring device boxes	5D
Wiring device switches	5A
Wiring devices	5A to 5G
Wood preservative	12V
Work towers	12D
Working lights	9E
Wound-rotor motors	8B
Woven tape	12S
Wrapping, cable	12U
Wrenches, torque & impact	12L
Wrought-iron conduit	7D

Y

Yard lights	9D
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SECTION 1. OUTDOOR DISTRIBUTION EQUIPMENT

See index for transmission line utilization equipment such as switches, transformers, cutouts, and pole line tools.

1A. CONDUCTOR SUPPORTING STRUCTURES

1. Crossarms
2. Poles
3. Towers

Basic equipment used to support outdoor power transmission line conductors.

- American Creosote Works Inc 1305 Dublin St (Box 4006) New Orleans 18 La (1-2)
American Crossarm and Conduit Co 7726 Sheridan Rd Chicago 26 Ill (1)
Bell Lumber & Pole Co 524 Midland Bank Bldg Minneapolis 1 Minn (2)
Brooks Lumber Co P O Box 153 Bellingham Wash (1)
Brown Wood Preserving Co 409 Commonwealth Bldg Louisville 2 Ky (2)
Carney (B J) & Co 326 Peyton Bldg Spokane 8 Wash (2)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3)—ADV PG 84-85
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (2)—ADV PG 2
Haley (R G) & Co Inc 767 Spitzer Bldg Toledo 4 Ohio (1-2)
Hatheway & Patterson Co Inc 15 County St Mansfield Mass (1)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (1)
Hughes Bros Inc Seward Neb (1-3)
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (1-2)
Koppers Co Inc Wood Preserving Div 750 Koppers Bldg Pittsburgh 19 Pa (2)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1)
McFarland (L D) Co McFarland Bldg Sandpoint Idaho (2)
Miller (T R) Mill Co Inc Brewton Ala (1-2)
Poles Inc E 706 Sprague Ave Spokane 3 Wash (1-2)
Republic Creosoting Co 1615 Merchants Bank Bldg Indianapolis 4 Ind (1-2)
Texas Creosoting Co P O Box 131 Orange Tex (1-2)
Union Metal Mfg Co 1432 Maple Ave NE Canton 5 Ohio (3)

1B. LINE TRUCKS & MOBILE EQUIPMENT

1. Earth-boring trucks & machines
2. Mobile towers & lifts
3. Pole-setting trucks & bodies
4. Trailers & dinkies
5. Trenchers & ditchers
6. Horizontal earth-boring equipment

Apparatus used to transport, erect and maintain power transmission line equipment.

- Adams Engineering Co 31711 Solon Rd Solon Ohio (1-4)
Barber-Greene Co 400 N Highland Ave Aurora Ill (5)
Case (J I) Co Racine Wis (5)
Charles Machine Works Inc P O Box 66 Perry Okla (5-6)
Cleveland Trencher Co 20100 St Clair Ave Cleveland 17 Ohio (5)
Davis Mfg Co Inc 1500 S McLean Blvd Wichita Kan (4-5)
Earthworm Boring Machine Inc 1415 14th St (P O Box 1100) Santa Monica Calif (1)
F W D Corp 105 E 12 St Clintonville Wis (1-3)
Gar Wood Industries Inc Wayne Mich (5)
Highway Trailer Industries Inc 405 E Fulton St Edgerton Wis (1-2-3-4)
Holan Corp 4100 W 150 St Cleveland 35 Ohio (1-2-3-4)
Hunt-Pierce Corp 59 Meadow St Milford Conn (1-2-3)
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (1)
McCabe-Powers Body Co 5900 N Broadway St Louis 15 Mo (1-2-3-4)
Mercury Hydraulics Inc 1632 Wazee St Denver 2 Colo (5)
Mobile Aerial Towers Inc 1730 N Harrison St Fort Wayne Ind (2)
Morrison Steel Products Inc 601 Amherst St Buffalo 7 NY (1-2-3)
Pitman Mfg Co Garner Ave & Duck Rd Grandview Mo (2)
Reading Body Works Inc 240 Gregg Ave Reading Pa (3)
Safety Live Line Tool Co 973 86th Ave Oakland 21 Calif (4)
Salem Tool Co 767 S Ellsworth Ave Salem Ohio (1)

- Silent Hoist & Crane Co 841 63rd St Brooklyn 20 NY (2-3)
Stahl Metal Products Inc 4750 W 160 St Cleveland 35 Ohio (3-4)
Stampings Inc Suite 314 321 24th St Rock Island Ill (5)
Telsta Corp 1700 Industrial Rd San Carlos Calif (2)
United States Air Conditioning Corp Skyworker Div Delaware Ohio (2)
Utility Body Co 1530 Wood St Oakland 7 Calif (2-3)
●VERMEER MFG CO Pella Iowa (5)—ADV PG 123
Williams (Hugh B) Mfg Co 8330 Lovett St (P O Box 7815) Dallas Tex (1-3)

1C. MANHOLE & TRENCH EQUIPMENT

1. Cable duct shields
2. Cable racks, hangers, arms, hooks & extensions
3. Clay duct dowel pins
4. Guard rail, shields & tents
5. Manhole cover hooks
6. Manhole frames & covers
7. Manhole ladders
8. Manhole stops
9. Pulling-in irons
10. Pumps
11. Ventilators
12. Trench braces

Basic underground equipment used in providing access to cable runs.

- Alhambra Foundry Co Ltd 1147 Meridian Ave Alhambra Calif (6-7-8-9)
Aurora Pump Div New York Air Brake Co 54 Loucks St Aurora Ill (10)
Barry (William B) Co (P O Box 63) Back Bay Annex Boston 17 Mass (1)
Chain Belt Co 4701 W Greenfield Ave Milwaukee 1 Wis (10)
Chance (A B) Co 210 North Allen St Centralia Mo (1-2-3-7-9)
Chicago Pneumatic Tool Co & E 44 St NY 17 NY (10)
Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa (1-2-4-5-6-8-9)
Coppus Engineering Corp 344 Park Ave Worcester 10 Mass (11)
Homelite Div Textron Inc 67 Riverdale Ave Port Chester NY (10)
Hopfield Industrial Mfg Co P O Box 54 San Rafael Calif (7)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (1-2-3-7-8-9)
Husky Products Inc 5300 Vine St Cincinnati 17 Ohio (2)
Hydro Engineering Inc 700 39th Ave N E Minneapolis 21 Minn (10)
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (2-9)
Kortick Mfg Co 5600 Third St San Francisco 24 Calif (2-3-4-5-7-8-9)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (2-9)
Oliver Electrical Mfg Co P O Box 217 Battle Creek Mich (1-2-3-7-8-9)
Piqua Machine & Mfg Co 400 S College St Piqua Ohio (10)
Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (2)
St Louis Malleable Casting Co 7701 N Conduit Ave St Louis 15 Mo (2)
Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (2)
United Electric Motor Co 178 Centre St NY 13 NY (11)
Utilities Service Co Grape & 7th St Allentown Pa (2-7-8-9)

1D. POLE & TOWER EQUIPMENT

1. Anchoring & guying materials
2. Dating nails & markers
3. Grounding equipment
4. Insulators & wireholders
5. Pole, crossarm & line hardware
6. Platforms & accessories

Pole & crossarm hardware includes such materials as dead ends, armor rods, line splices, brackets, special bolts and pins, catenary supports, etc.

- Acromark Co 320 Morrell St Elizabeth 4 NJ (2)
Adams Engineering Co 31711 Solon Rd Solon Ohio (6)
Blackburn (Jasper) Corp 1525 Woodson Rd St Louis 14 Mo (1-3)
Brewer-Titchener Corp 111 Port Watson St Cortland NY (5)
Chance (A B) Co 210 N Allen St Centralia Mo (1-4-5-6)
Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn (2)
Copperweld Steel Co Wire & Cable Div Glassport Pa (1-2-3)

- Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (1-4)
Dixie Electrical Mfg Co P O Box 6298-Tarrant Branch Birmingham 7 Ala (1-3-4-5)
Electrolite Mfg Co 2622 E 51st St Cleveland 4 Ohio (4)
Fanner Mfg Co Electrical Products Div Brookside Park Cleveland 9 Ohio (1-5)
Fargo Mfg Co Inc 845 Main St Poughkeepsie NY (5)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 6)—ADV PG 84-85
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-2-3-4-5)—ADV PG 2
Grip-Tite Mfg Co 115 W Jefferson St Winterset Iowa (1)
Haley (R G) & Co Inc 767 Spitzer Bldg Toledo 4 Ohio (5)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (1-2-3-4-5)
Hughes Bros Inc Seward Neb (1-3-5-6)
Hussey (C G) & Co 2850 Second Ave Pittsburgh 19 Pa (2)
I-T-E Circuit Breaker Co Victor Insulators Div Victor NY (4)
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (1 thru 5)
Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo (1)
Keyes-Davis Co 89 14th St Battle Creek Mich (2)
Kimble Glass Co P O Box 1035 Toledo 1 Ohio (4)
Knox Porcelain Corp 2706 Mynders Ave P O Box 2031 Knoxville 1 Tenn (4)
Kortick Mfg Co 5600 Third St San Francisco 24 Calif (1 thru 6)
Lapp Insulator Co Inc 35 Gilbert St Leroy NY (4)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-3-4-5)
Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (4)
Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (5)
Mercury Products Inc Boston Post Rd Guilford Conn (3)
Ohio Brass Co 380 N Main St Mansfield Ohio (4-5)
Oliver Electrical Mfg Co P O Box 217 Battle Creek Mich (1-2-3-4-5)
Page Steel & Wire Div American Chain & Cable Co Inc P O Box 692 Monessen Pa (1)
Penn-Union Electric Corp 315 State St Erie Pa (1)
Pieper-Lillard Div Jasper Blackburn Corp 1525 Woodson Rd St Louis 14 Mo (1)
Porcelain Products Co 224 N Patterson St Carey Ohio (3-4-5)
Preformed Line Products Co 5349 St Clair Ave Cleveland 3 Ohio (1-5)
Premax Products Div Chisholm-Ryder Co College & Highland Aves Niagara Falls NY (2-3)
Railroad Accessories Corp Tenakill Park Cresskill NJ (5)
Safety Live Line Tool Co 973 86th Ave Oakland 21 Calif (3-6)
St Louis Malleable Casting Co 7701 N Conduit Ave St Louis 15 Mo (4-5)
South River Metal Products Co Inc 377 Turnpike South River NJ (1)
Superior Porcelain Co 931 1/2 Market St Parkersburg W Va (4)
Thiel Tool & Engineering Co 1417 N Market St St Louis 6 Mo (5)
Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (5)
Universal Clay Products Co 1598 First St Sandusky Ohio (4)
Utilities Service Co Grape & 7th St Allentown Pa (1 thru 5)
Weaver (J A) Co 2110 Howard St St Louis 6 Mo (3)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

Code No.	Description, Pages Catalog No. & Mfr.
1-1	Manhole Rings and Covers; 16p; Cat. No. 2 (Alhambra)
1-2	Wheel Ditcher; 15p; Cat. No. 2700 (Barber-Greene)
1-3	Trenchers; 12p (Charles Machine)
1-4	Utility Bodies and Equipment; 100p (McCabe-Powers)

SECTION 2. TRANSFORMERS AND CONVERSION EQUIPMENT

2A. POWER & LIGHTING TRANSFORMERS, AUTOTRANSFORMERS & ACCESSORIES

1. Dry-type transformers
2. Liquid-filled transformers
3. Transformer radiators & tanks
5. Tap-changing equipment
6. Transformer mounting brackets

General-purpose transformers for substations, building light and power, and transmission line distribution.

A C Transformer Corp 89 Madison St Newark NJ (1)
 Acme Electric Corp 45 Water St Cuba NY (1)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-2)
 American Rectifier Corp 95 Lafayette St NY 13 NY (1)
 Arjac Products Inc 55-59 Halstead St Rochester 10 NY (1)
 Atlantic Transformer Co 8330 Hegerman St Philadelphia 36 Pa (1)
 Atlantic Transformer Div New London Instrument Co Inc 30 Hynes Ave Groton Conn (1-2)
 Barklew Electric Mfg Co 1905 Columbia Ave Middletown Ohio (5)
 Central Transformer Corp P O Box 1753 Pine Bluff Ark (2)
 Crittenden Transformer Works Inc 13011 S Spring St Los Angeles 61 Calif (1)
 Delta-Star Electric Div H K Porter Co Inc 1777 Industrial Way Belmont Calif (1-2)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (1-2)
 Dongan Electric Mfg Co 2987-3001 Franklin St Detroit 7 Mich (1)
 Eisler Engineering Co Inc 750 S 13 St Newark 3 NJ (1-2)
 Electro Engineering Works 401 Preda St San Leandro Calif (1)
 Erie Electric Co Inc 120 Church St Buffalo 2 NY (1-2)
 Emco Mfg Co P O Box 1039 Greenville Tex (1-2)
 Federal Pacific Electric Co 50 Paris St Newark NJ (1-2)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3-5-6)—ADV PG 84-85
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-2)—ADV PG 2
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (1-2-5)
 Hevi Duty Electric Co 3002 W Burleigh St (P O Box 563) Milwaukee 1 Wis (1-2)
 Hindle Transformers Co Inc Woods Church Rd Flemington NJ (1)
 Hughes Bros Inc Seward Neb (6)
 J-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa (1-2)
 Jefferson Electric Co 25th & Madison Bellwood Ill (1)
 Jeffries Transformer Co 610 Turner St Los Angeles 12 Calif (1)
 Knopp Inc 1307 66th St Oakland 8 Calif (1)
 Kortick Mfg Co 5600 Third St San Francisco 24 Calif (6)
 Kuhlman Electric Co P O Box 288 Birmingham Mich (1-2)
 Land-Air Inc 7444 W Wilson Ave Chicago 31 Ill (1)
 Lindberg Engineering Corp 2450 W Hubbard St Chicago 12 Ill (1)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-2-5)
 Magnatran Inc P O Box 211 Kearny NJ (1-2)
 Marcus Transformer Co Inc Leesville Ave Rahway NJ (1-2)
 Moloney Electric Co 5390 Bircher Blvd St Louis 20 Mo (1-2-5)
 Niagara Transformer Corp 1751 Dale Rd Buffalo 25 NY (1-2)
 Nothelfer Winding Labs Inc 220 Ewingville Rd (P O Box 455) Trenton 3 NJ (1)
 Oliver Electrical Mfg Co P O Box 217 Battle Creek Mich (6)
 Pennsylvania Transformer Div McGraw-Edison Co Box 330 Canonsburg Pa (1-2)
 Precision Transformer Corp 2483 Greenleaf Ave Elk Grove Village Ill (1-2)
 R T & E Corp 1900 East North St Waukesha Wis (2)
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY (1)
 Shaw-Perkins Mfg Co 201 E Carson St Pittsburgh 19 Pa (3)
 ●SORGEL ELECTRIC CO 8388 W National Ave Milwaukee 4 Wis (1)—ADV PG 94, 99, 102
 Standard Transformer Co 140 Dana St N E Warren Ohio (1-2)
 ●THIEL TOOL & ENGINEERING CO 1417 N Market St St Louis 6 Mo (6)—ADV PG 125
 Uptegraff Mfg Co R E P O Box 182 Scottsdale Pa (1-2)

●UTILITY TRANSFORMER AND EQUIPMENT CO 702 Lynn Ave Baraboo Wis (1)—ADV PG 126
 Wagner Electric Corp 6400 Plymouth Ave St Louis 33 Mo (1)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3-5)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-6)—ADV PG 2nd cover
 Zinsco Electrical Products 729 Turner Los Angeles 12 Calif (1)

2B. SPECIAL PURPOSE TRANSFORMERS

1. Arc & discharge lamp
2. Control
3. Heating
4. Ignition
5. Instrument
6. Phase-changing or -shifting
7. Rectifying
8. Pipe thawing
9. Signalling
10. Tap-changing
11. Variable voltage
12. Voltage-regulating
13. Welding, soldering & brazing
14. Current-limiting
15. Isolating
16. Furnace control
17. Grounding
18. Machine tool
19. Loading
20. Mobile
21. Street lighting

Transformers designed to serve specific or specialized functions or equipment.

A C Transformer Corp 89 Madison St Newark NJ (2-3-6-7-13)
 Accurate Electronics Co 2005 Blue Island Ave Chicago 8 Ill (6)
 Acme Electric Corp 45 Water St Cuba NY (1-2-5-6-7-9 thru 13-15-18)
 Acro Welder Mfg Co 1719 W St Paul Ave Milwaukee 3 Wis (13)
 Advance Transformer Co 2950 N Western Ave Chicago 18 Ill (1)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (5-6-7-10-11-12-16-20)
 Annis (R B) Co 1101 N Delaware St Indianapolis 2 Ind (5)
 Arjac Products Inc 55-59 Halstead St Rochester 10 NY (1)
 Associated Research Inc 3789 W Belmont Ave Chicago 18 Ill (5)
 Atlantic Transformer Co 8330 Hegerman St Philadelphia 36 Pa (6)
 Atlantic Transformer Div New London Instrument Co Inc 30 Hynes Ave Groton Conn (5-9)
 Berkshire Transformer Corp Kent Conn (2-3-4-5-7-9-10-13)
 Bush Transformer Corp 707 North St Endicott NY (2 thru 7-9-10-12)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (9)
 Central Transformer Co 900 W Jackson Blvd Chicago 7 Ill (2-9-13)
 Cohu Electronics Inc Kin Tel Div 5725 Kearney Villa Rd San Diego 12 Calif (5)
 Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (1)
 Cooper Hewitt Electric Co Inc 720-732 Grand St Hoboken NJ (1)
 Crest Transformer Corp 1834-36 W North Ave Chicago 22 Ill (2-9)
 Crittenden Transformer Works Inc 13011 S Spring St Los Angeles 61 Calif (3-5-7)
 Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (2)
 Daystrom Inc Weston Instruments Div 614 Freling-huysen Ave Newark 12 NJ (5)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (2-5-7-10-12)
 Dongan Electric Mfg Co 2987-3001 Franklin St Detroit 7 Mich (1-2-4-9-18)
 Dormeyer Industries 3418 Milwaukee Ave Chicago 41 Ill (2-4-7-11)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (14)
 Esaco Products Inc (P O Box 587) Ypsilanti Mich (11)
 Edwards Co Inc Norwalk Conn (9)
 Electran Mfg Co 1901 Clyburn Ave Chicago 14 Ill (1-2-5-6-7-9-10-13-14-15)
 Electrical Windings Inc 2015 N Kolmar Ave Chicago 39 Ill (5-15)
 Electro Engineering Works 401 Preda St San Leandro Calif (6)
 Emerson-Rittenhouse Co Inc 68 East St Honeoye Falls NY (9)
 Faraday Inc 2011 W Beecher Rd Adrian Mich (5-9)

Federal-Warco Div McKay Machine Co 1745 Over-side Ave NE Warren Ohio (13)
 Forest Electric Co 1001 N 25 Ave Melrose Park Ill (4-5-6-7-9 thru 18-21)
 France Mfg Co 10325 Berea Rd Cleveland 2 Ohio (1-3)
 Gardner Neon & Ignition Transformers Inc 1010 38th Ave Oakland 1 Calif (2-4-16)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2 thru 7-9 thru 12-14-16-18-21)
 General Radio Co West Concord Mass (11)
 Harold Electric Co 210 E Adler St Walla Walla Wash (8)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (7-12-16-17)
 Hevi Duty Electric Co 3002 W Burleigh St (P O Box 563) Milwaukee 1 Wis (2-3-6-10-12)
 Hindle Transformer Co Inc Woods Church Rd Flemington NJ (2-3-6-7-9-10-13-15-16-17-18-20)
 Hugely & Phillips Inc 3200 North San Fernando Blvd Burbank Calif (15)
 Jefferson Electric Co 25th & Madison Bellwood Ill (1-2-4)
 Jeffries Transformer Co 610 Turner St Los Angeles 12 Calif (2)
 Knopp Inc 1307 66th St Oakland 8 Calif (19)
 Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (2-6)
 Lee Electric Inc 566 52nd St West New York NJ (9)
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (13)
 Magnatran Inc P O Box 211 Kearny NJ (3-7-13-15-19-20)
 Marcus Transformer Co Inc Leesville Ave Rahway NJ (6-7-13-16)
 McCarthy Electric Co 9640 Grinnell Detroit 13 Mich (13-16)
 Miami Carey Div Philip Carey Mfg Co Middletown Ohio (9)
 Midwest Electric Products Inc 1515 N Front St Mankato Minn (5)
 Moloney Electric Co 5390 Bircher Blvd St Louis 20 Mo (7-10-12-20)
 Nepo Mfg Co 4230 N Sayre Chicago 34 Ill (1)
 Niagara Transformer Corp 1751 Dale Rd Buffalo 25 NY (2-16)
 Nothelfer Winding Labs Inc 220 Ewingville Rd (P O Box 455) Trenton 3 NJ (3-5-7-8-10-13-14-16-18)
 Nutone Inc Madison & Red Banks Roads Cincinnati 27 Ohio (9)
 Ohmite Mfg Co 3601 Howard St Skokie Ill (11)
 Opad Electric Co 43 Walker St New York 13 NY (7)
 Partrick & Wilkins Co 51 N Seventh St Phila & Pa (9)
 Pennsylvania Transformer Div McGraw-Edison Co Box 330 Canonsburg Pa (10-16)
 Precision Transformer Corp 2483 Greenleaf Ave Elk Grove Village Ill (2-3-7-13)
 Raytheon Co Commercial Apparatus & Systems Div 100 River St Waltham 54 Mass (13)
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn (12)
 Raytheon Co Microwave & Power Tube Div Foundry Ave Waltham 54 Mass (15)
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY (2-7-10 thru 15-19-20)
 Sangamo Electric Co 11th & Converse Springfield Ill (5)
 Siegler Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (2-7-12-18)
 Sierra Electric Corp 15100 S Figueroa St (P O Box 85) Gardena Calif (7-14)
 Simplex Co Inc 1139-41 N MacArthur Blvd Springfield Ill (5)
 Sola Electric Co 1717 Busse Rd Elk Grove Village Ill (1)
 Sorensen & Co Richards Ave South Norwalk Conn (12)
 ●SORGEL ELECTRIC CO 8388 W National Ave Milwaukee 4 Wis (2-3-6 thru 10-13-14-15-17-18)—ADV PG 94, 99, 102
 Southwestern Industrial Electronics Co 10201 West-helmer (P O Box 22187) Houston 27 Tex (5-7-12)
 Standard Electrical Products Co 2240 E Third St Dayton 3 Ohio (11-12)
 Standard Transformer Co 140 Dana St N E Warren Ohio (5)
 States Co 19 E New Park Ave Hartford 6 Conn (6)
 Superior Electric Co 383 Middle St Bristol Conn (5-11)
 System Analyzer Corp 700 W State St Nokomis Ill (5)
 Taylor-Winfield Corp 1052 Mahoning Ave N W Warren Ohio (3-13)
 Touch-Plate Mfg Corp Box 1970 Long Beach Calif (2)
 Trine Mfg Corp 1430 Ferris Pl New York 61 NY (9)
 United States Electronics Corp 275 Warren St Lyndhurst NJ (2)
 United Transformer Co 150 Varick St New York 13 NY (1-2-3-5-7-9-11-12)

Uptegraff (R E) Mfg Co P O Box 182 Scottsdale Pa (5)
 Utility Transformer & Equipment Co 702 Lynn Ave Baraboo Wis (6-7)
 Western Electro-Mechanical Co Inc 300 Broadway Oakland 7 Calif (5)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-5-6-7-9 thru 18-21)

2C. RECTIFIERS

1. Copper oxide
2. Electronic tube
3. Germanium
4. Mechanical
5. Selenium
6. Silicon

Apparatus used for industrial applications which require conversion of alternating to direct current.

Accurate Electronics Co 2005 Blue Island Ave Chicago 8 Ill (5)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (3-6)
 American Rectifier Corp 95 Lafayette St NY 13 NY (5-6)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (5-6)
 Bradley Semiconductor Corp 275 Walton St New Haven 11 Conn (1-5-6)
 Cathodic Protection Service 4601 Stanford St Houston Tex (5-6)
 Christie Electric Corp 3410 West 67 St Los Angeles 43 Calif (5-6)
 Conant Laboratories Box 3997 Bethany Station Lincoln 5 Neb (1-5)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (2-3-5-6)
 Gates Electronic Co 2090 Barnes Ave Bronx 62 NY (5-6)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (5-6)
 General Instrument Rectifier Div 240 Wythe Ave Brooklyn 11 NY (5-6)
 Good-All Electric Mfg Co 112 W First St Ogalla Neb (5-6)
 Hughes Electronics Co 5271 W Jefferson Blvd Los Angeles 16 Calif (6)
 I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa (6)
 ITT Components Div P O Box 412 Clifton NJ (5-6)
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio (6)
 Kneisley Electric Co 2501-2509 Leverage St Toledo 3 Ohio (2-5-6)
 Ledex Inc 123 Webster St Dayton 2 Ohio (5-6)
 Magnatran Inc P O Box 211 Kearny NJ (2)
 Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind (1)
 Opad Electric Co 43 Walker St New York 13 NY (5)
 Potter & Rayfield Inc P O Box 1042 Atlanta Ga (2)
 Pyramid Electric Co 1445 Hudson Blvd North Bergen NJ (5)
 Rapid Electric Co Inc 2881 Middletown Rd Bronx 61 NY (5-6)
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn (1-2-6)
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (2)
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point 11 NY (5-6)
 Sanford Miller Co Inc 11 Lynch St Brooklyn 11 NY (5-6)
 Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio (1-6)
 Shrader (F W) Co 11623 S Broadway Los Angeles 61 Calif (5-6)
 Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (6)
 Sorensen & Co Richards Ave South Norwalk Conn (1-2-6)
 States Co 19 New Park Ave Hartford 6 Conn (3)
 Stearns Electric Corp 120 N Broadway Milwaukee 2 Wis (5)
 Sylvania Electric Products Inc 730 Third Ave New York 19 NY (3)
 Syntro Corp 690 Lexington Ave Homer City Pa (5-6)
 Ther Electric & Machine Works 17 S Jefferson St Chicago 6 Ill (1-2-5)
 Varo Inc 2201 Walnut St Garland Tex (6)
 Versabar Corp 14 Whyte St Jersey City NJ (6)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (2)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2-3-5-6)

2D. CONVERTERS

1. Frequency changers
2. Inverters
3. Phase converters & shifters
4. Static converters
5. Synchronous (rotary) converters

Static and rotary converters are used to transform ac current to dc; inverters (static or rotary) are converters which transform dc to ac. Frequency changers convert normal 60-cycle current to a higher frequency; phase converters provide 2- or 3-phase power from a single-phase source, or vice versa.

Acme Electric Corp 45 Water St Cuba NY (3-4)
 Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (1)
 Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (1-4-5)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (1-2-5)
 Carter Motor Co 2711 W George St Chicago 18 Ill (1-2-5)
 Continental Electric Co 1234 S Prairie Ave (P O Box 895) Hawthorne Calif (1)
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ (1)
 Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ (2)
 Dalmotor Co 1375 Clay St Santa Clara Calif (1)
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill (2-4)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (2-4)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (1-5)
 Electric Motors & Specialties Inc King & Hamshire Sts Garrett Ind (1)
 Electro-Solid Controls Inc 8001 Bloomington Freeway Minneapolis 20 Minn (1)
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif (1)
 Elliott Co Jeannette Pa (1)
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill (1)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 5)
 Georator Corp Manassas Va (1)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (1-5)
 Holtzer-Cabot Corp 125 Amory St Boston 19 Mass (1-4)
 Ideal Electric & Mfg Co East First St Mansfield Ohio (1-2-3-5)
 Jerrold Electronics Corp Jerrold Bldg 15th & Lehigh Ave Philadelphia 32 Pa (1)
 K F Industries Inc 230 W Dauphin St Philadelphia 33 Pa (4)
 Kato Engineering Co 1442 First Ave Mankato Minn (1-2-3-5)
 Katolight Corp First Ave at Chestnut (P O Box 891) Mankato Minn (5)
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio (1-5)
 Knopp Inc 1307 66th St Oakland 8 Calif (3)
 Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis (1)
 Leach Corp 18435 Susana Rd Compton Calif (1 thru 5)
 Lewis Electric Co 1254 W Harrison St Chicago 7 Ill (3-4)
 Minneapolis-Honeywell Regulator Co Boston Div 40 Life St Boston 35 Mass (4)
 Radio Frequency Laboratories Inc Boonton NJ (1)
 Robbins & Myers Inc 1345 Lagonda Ave Springfield Ohio (1)
 Safety Electrical Equipment Corp 1187 Dinwell Ave New Haven Conn (1 thru 5)
 Sangamo Electric Co 11th & Converse Springfield Ill (5)
 Siegler Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (2-4)
 Sorensen Richards Ave South Norwalk Conn (1-2)
 States Co 19 E New Park Ave Hartford 6 Conn (3)
 Syntro Corp 690 Lexington Ave Homer City Pa (4)
 System Analyzer Corp 700 W State St Nokomis Ill (3)
 Terado Corp 1068 Raymond Ave St Paul 8 Minn (2)
 Tocco Div Ohio Crankshaft Co 3800 Harvard Ave Cleveland 5 Ohio (1)
 Varo Inc 2201 Walnut St Garland Tex (1)
 Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo (4)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (1)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 5)

2E. BATTERIES

1. Primary, dry
2. Primary, wet
3. Secondary (storage)
4. Rechargeable dry cells

Primary dry cells are replaced when exhausted; primary wet cells may be restored by replacing electrolyte and electrodes when necessary. Secondary or storage batteries are recharged using a primary source of electrical energy.

Bright Star Industries 600 Getty Ave Clifton NJ (1)
 Burgess Battery Co Freeport Ill (1-4)
 C & D Batteries Div Electric Autolite Co Washington & Cherry Sts Conshohocken Pa (3)
 Carbone Corp 400 Myrtle Ave Boonton NJ (1-2)
 Dillin (Frank W) Corp 315 W Adams Blvd Los Angeles 7 Calif (3)
 Dual-Lite Co Inc Newtown Conn (3)
 DuBois Electric Storage Battery Co 500 W DuBois Ave DuBois Pa (3)
 Edison (Thomas A) Industries McGraw-Edison Co Storage Battery Div West Orange NJ (3)
 Exide Industrial Marketing Div Electric Storage Battery Co Rising Sun Adams Ave (P O Box 5723) Philadelphia 20 Pa (3)
 General Battery and Ceramic Corp Box 1262 Reading Pa (3)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (3-4)
 Gould-National Batteries Inc Trenton 7 NJ (3)
 Gulton Industries Inc Alkaline Battery Div Metuchen NJ (3)
 Lightlamps Electronics Corp 10 W Houston St New York 12 NY (1-2-3)
 Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind (1)
 Marathon Battery Co P O Box 298 Wausau Wis (1)
 Nicad Div Gould-National Batteries Inc Easthampton Mass (3)
 Perkins Battery Co 214 Golden Lane New Oxford Pa (3)
 Scranton Storage Battery Corp Archbold Pa (3)
 Sonotone Corp Elmford NY (3-4)
 Standard Electric Co Inc P O Box 6356 San Antonio 9 Tex (3)
 Surrette Storage Battery Co Inc Jefferson Ave Salem Mass (3)
 Union Carbide Consumer Products Co 270 Park Ave New York 17 NY (1-4)
 Willard Sales Electric Storage Battery Co P O Box 6266 Cleveland 1 Ohio (3)
 Wisco Div Electric Storage Battery Co 1222 18th St Racine Wis (3)
 Yardney Electric Corp 40-50 Leonard St New York 13 NY (2-3)

2F. BATTERY CHARGERS

Equipment, complete with necessary controls, for restoring secondary batteries. May incorporate metallic-oxide rectifiers, electronic tube rectifiers, or motor-generator set.

Accurate Electronics Co 2005 Blue Island Ave Chicago 8 Ill (5)
 Acme Electric Corp 45 Water St Cuba NY
 Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich
 American Rectifier Corp 95 Lafayette St NY 13 NY
 Automatic Switch Co 50-56 Hanover Rd Florham Park NJ
 Blitz Electric Co 5713 Wentworth Ave Chicago 21 Ill
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ
 C & D Batteries Div Electric Autolite Co Washington & Cherry Sts Conshohocken Pa
 Control Panel Corp 4431 W Division St Chicago 51 Ill
 Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ
 Curtis Development & Mfg Co 3244 N 33 St Milwaukee 16 Wis
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill
 Edison (Thomas A) Industries McGraw-Edison Co Storage Battery Div West Orange NJ
 Electric Service System Inc 5555 Highway 5 West Minneapolis 24 Minn
 Electro Powerpacs Inc 5 Hadley St Cambridge 40 Mass
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill
 Fox Products Co 4720 N 18 St Phila 41 Pa
 Gates Electronic Co 2090 Barnes Ave Bronx 62 NY
 General Battery and Ceramic Corp Box 1262 Reading Pa
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
 Gould-National Batteries Inc Trenton 7 NJ
 Hobart Bros Hobart Square Troy 1 Ohio
 Howard Industries Inc 1760 State St Racine Wis
 Hughes Electronics Co 5271 W Jefferson Blvd Los Angeles 16 Calif
 International Electric Fence Co Inc Box 650 Albert Lea Minn
 Jeta Inc Yonkers NY
 K F Industries Inc 230 W Dauphin St Philadelphia 33 Pa
 Kato Engineering Co 1442 First Ave Mankato Minn
 Katolight Corp First Ave at Chestnut (P O Box 891) Mankato Minn

Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio
 Kohler Co Kohler Wis
 Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis
 Lightalms Electronics Corp 10 W Houston St New York 12 NY
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio
 Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind
 Motoresearch Co 1600 Junction Ave Racine Wis
 Onan Div Studebaker-Packard Corp 2515 University Ave SE Minneapolis 14 Minn
 Pioneer Gen-E-Motor Co 5841 W Dickens St Chicago 39 Ill
 Quick Charge Div Little Giant Corp 3810 N Tulsa St Oklahoma City Okla
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn
 Rex Metal Craft Inc 1717 Gent St Indianapolis 2 Ind
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY
 Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio
 Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ
 Simplex Co Inc 1139-41 N MacArthur Blvd Springfield Ill
 Sorenson & Co Inc Richards Ave South Norwalk Conn
 Terado Corp 1068 Raymond Ave St Paul 8 Minn
 Triple-A Specialty Co 2835 N Western Ave Chicago 18 Ill
 U S Electric Motor Co Cadiz Ohio
 Universal Motor Co 438 Universal Dr Oshkosh Wis
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
 Willard Sales Electric Storage Battery Co P O Box 6266 Cleveland 1 Ohio
 Winpower Mfg Co Newton Iowa

Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill
 Exide Industrial Marketing Div Electric Storage Battery Co Rising Sun & Adams Ave (P O Box 5723) Philadelphia 20 Pa
 Fox Products Co 4720 N 18 St Phila 41 Pa
 General Battery and Ceramic Corp Box 1262 Reading Pa
 General Industries Inc 34529 Ford Rd Garden City Mich
 Goldak Co Inc 1544 W Glenoaks Blvd Glendale 1 Calif
 Hessel (W F) Co Inc 74 Beekman St NY 38 NY
 Jordan Electric Products Electric Storage Battery Co P O Box 6266 Cleveland 1 Ohio
 Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio
 Lightalms Electronics Corp 10 W Houston St New York 12 NY
 Mueller Electric Co 15555 E 31 St Cleveland 14 Ohio
 New Jersey Zinc Co 160 Front St New York 38 NY
 Ohmite Mfg Co 3601 Howard St Skokie Ill
 Penn-Union Electric Corp 315 State St Erie Pa
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY
 St Marys Carbon Co State St St Marys Pa
 Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ
 Sittler Corp 18 N Ada St Chicago 7 Ill
 Sola Electric Co 1717 Busse Rd Elk Grove Village Ill
 Triple-A Specialty Co 2835 N Western Ave Chicago 18 Ill
 Victor Instrument Mfg Co Inc 33 W 60 St New York 23 NY
 Walker Brothers P O Box 33 Conshohocken Pa
 Willard Sales Electric Storage Battery Co P O Box 6266 Cleveland 1 Ohio

Jordan Electronics 121 S Palm Ave Alhambra Calif
 Radio Frequency Laboratories Inc Boonton NJ
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY
 Sensitive Research Instrument Corp 310 Main St New Rochelle NY
 Sola Electric Co 1717 Busse Rd Elk Grove Village Ill
 Sorensen Richards Ave South Norwalk Conn
 Superior Electric Co 383 Middle St Bristol Conn
 Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich

TECHNICAL LITERATURE

bers* on the Free Information cards To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
2-1	Rectifiers and Power Supplies; 41p (American Rectifier)
2-2	Power Supplies and Meters; 20p; Cat. No. 60A (Davenport)
2-3	Distribution Transformers; 26p; Cat. No. SM-7-61 (Delta-Star)
2-4	Batteries for Switchgear Control, Emergency Light and Power; 24p; Cat. No. 5800 (Exide)
2-5	Distribution Transformers; 28p; Cat. No. GEA-7563 (GE Co.)
2-6	Dry-Type Transformers; 24p; Cat. No. GEC-1070 (GE Co.)
2-7	Power Transformers; 16p; Cat. No. 51109 (Hawker Siddeley)
2-8	Distribution Transformers; 8p; Cat. No. 62/1001 (Hawker Siddeley)
2-9	AC Adjustable Power Supplies; 8p; Cat. No. SB-LB-1 (Multi-Amp)
2-10	Silicon & Selenium Rectifiers; 40p (Rapid Electric)
2-11	Power Supplies; 30p (Sorenson)
2-12	Transformers & Substations; 12p; Cat. No. 960 (Sorgel)

2G. BATTERY & CHARGING ACCESSORIES

Auxiliary equipment specifically intended to aid in the use and care of batteries and charging equipment, such as cable leads and clamps, testers, charging plugs and regulators.

Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich
 Anderson (Albert & JM) Mfg Co 289 A St Boston 10 Mass
 Belden Mfg Co P O Box 5070A Chicago 80 Ill
 Blitz Electric Co 5713 Wentworth Ave Chicago 21 Ill
 Bryant Mfg Co 410 N Paulina St Chicago 22 Ill
 C & D Batteries Div Electric Autolite Co Washington & Cherry Sts Conshohocken Pa

2H. POWER SUPPLIES

Acme Electric Corp 42 Water St Cuba NY
 Christie Electric Corp 3410 West 67 St Los Angeles 43 Calif
 Cohu Electronics Inc Kin Tel Div 6725 Kearney Villa Rd San Diego 12 Calif
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill
 Gates Electronic Co 2090 Barnes Ave Bronx 62 NY
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 8 NY
 Hampden Engineering Corp 99 Shaker Rd East Longmeadow Mass
 Harder (Donald C) Co 2580 K St San Diego 2 Calif
 Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif
 Hughes Electronics Co 5271 W Jefferson Blvd Los Angeles 16 Calif

SECTION 3. SWITCHING & CONTROL EQUIPMENT

Indicating devices and alarms used in conjunction with switches and controls are listed in Section 10.

3A. UNIT SUBSTATIONS

Complete assemblies for transformation and distribution of power.

Acme Electric Corp 45 Water St Cuba NY
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis
 Central Electric Co Fulton Mo
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill
 Delta Switchboard Co 605 W Fremont St (P O Box 1995) Stockton Calif
 Empire Switchboard Co Inc 810 Fourth Ave Brooklyn 32 NY
 Esco Mfg Co P O Box 1039 Greenville Tex
 Federal Pacific Electric Co 50 Paris St Newark 5 NJ
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY

General Electric Co Distribution Assemblies Dept 41 Woodford Ave Plainville Conn
 Gustavson Inc 8600 Chestnut St Kansas City 32 Mo
 Hughes Bros Inc Seward Neb
 I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa
 Kinney Electrical Mfg Co 678 Buckeye St Elgin Ill
 Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ
 Leonard Electric Mfg Co 3907 Perkins Ave Cleveland 14 Ohio
 Lexington Electric Products Co Inc 12 Chapel St Newark 5 NJ
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis
 Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 6 NY
 Moloney Electric Co 5390 Bircher Blvd St Louis 20 Mo
 Mullenbach Div Electric Machinery Mfg Co 2100 E 27 St Los Angeles 58 Calif
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla
 Niagara Transformer Corp 1751 Dale Rd Buffalo 25 NY
 Pennsylvania Transformer Div McGraw-Edison Co Box 330 Canonsburg Pa
 Royal Electric Mfg Co 1122 E 87 St Chicago 19 Ill

●SORGEL ELECTRIC CO 838B W National Ave Milwaukee 4 Wis—ADV PG 94, 99, 102
 Square D Co Executive Plaza Park Ridge Ill
 Standard Transformer Co 140 Dana St N E Warren Ohio
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
 Young Electric & Mfg Co Inc 2134 Curtis Denver 5 Colo
 Zinsco Electrical Products 729 Turner Los Angeles 12 Calif

3B. SWITCHGEAR

Enclosed assembly of switching and interrupting devices and associated equipment for distribution of power.

Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis
 Central Electric Co Fulton Mo
 Cleveland Switchboard Co 2925 E 79 St Cleveland 4 Ohio
 Continental Electric Equipment Co Box 1055 Cincinnati 1 Ohio
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill

Delta Switchboard Co. 605 W. Fremont St. (P O Box 1995) Stockton Calif
 Electric Machinery Mfg Co. 800 Central Ave. Minneapolis 13 Minn
 Empire Switchboard Co. Inc. 810 Fourth Ave. Brooklyn 32 NY
 Federal Pacific Electric Co. 50 Paris St. Newark 5 NJ
 Fouch Electric Mfg Co. Inc. 2138 N Interstate Ave. (P O Box 3978) Portland 8 Ore
 G & W Electric Specialty Co. 3500 W 127 St. Blue Island Ill
 General Electric Co. Industrial Sales Operation 1 River Road Schenectady 5 NY
 ●GENERAL ELECTRIC SUPPLY CO. 1260 Boston Ave. Bridgeport Conn—ADV PG 84-85
 ●GRAYBAR ELECTRIC CO. INC. 420 Lexington Ave. NY 17 NY—ADV PG 2
 Gustavson Inc. 8600 Chestnut St. Kansas City 32 Mo
 Ideal Electric and Mfg Co. East First St. Mansfield Ohio
 I-T-E Circuit Breaker Co. 1900 Hamilton St. Philadelphia 30 Pa
 Lake Erie Electric Mfg Inc. 2952 W 22 St. Erie Pa
 Leonard Electric Mfg Co. 3907 Perkins Ave. Cleveland 14 Ohio
 Lexington Electric Products Co. Inc. 12 Chapel St. Newark 5 NJ
 Marquette Electric Switchboard Co. 311 N Desplains St. Chicago 6 Ill
 Metropolitan Electric Mfg Co. 2250 Steinway St. Long Island City 5 NY
 Moloney Electric Co. 5390 Bircher Blvd. St. Louis 20 Mo
 Mullenbach Div. Electric Machinery Mfg Co. 2100 E 27 St. Los Angeles 58 Calif
 Nelson Electric Mfg Co. P O Box 5385 Tulsa Okla
 Pennsylvania Transformer Div. McGraw-Edison Co. Box 330 Canonsburg Pa
 Pyle-National Co. 1344 N Kostner Ave. Chicago 51 Ill
 Russell & Stoll Co. Inc. 125 Barclay St. NY 7 NY
 ●S & L ELECTRIC CO. 6601 Ridge Blvd. Chicago 26 Ill—ADV PG 122
 Siegler Corp. Magnetic Amplifiers Div. 632 Tinton Ave. New York 55 NY
 Southern Electrical Equipment Co. 308 W Bland at Mint St. Charlotte 3 NC
 Square D Co. Executive Plaza. Park Ridge Ill
 Westinghouse Electric Corp. P O Box 2278 Pittsburgh 30 Pa
 ●WESTINGHOUSE ELECTRIC SUPPLY CO. 3 Gateway Center (Box 448) Pittsburgh 30 Pa—ADV PG 2nd Cover
 Young Electric & Mfg Co. Inc. 2134 Curtis Denver 5 Colo
 Zinsco Electrical Products. 729 Turner. Los Angeles 12 Calif

3C. SWITCHBOARDS

1. Metering & control
2. Power & light
3. Stage
4. Laboratory & experimental

Metering & control boards and panels mount devices used to regulate, indicate and record operation of such equipment as boilers, turbines, furnaces and industrial processing equipment.

Adam (Frank) Electric Co. 3647 Windsor Pl. St. Louis Mo (1-2-3)
 Allis-Chalmers Mfg Co. 930 S 70th St. Milwaukee 1 Wis (1-2)
 Alwalt Mfg Co. Inc. 1706 Lapham Dr. (P O Box 1171) Modesto Calif (1)
 Automatic Electric Sales Corp. Northlake Ill (1)
 Bryant Electric Co. 1421 State St. (Box D Barnum St.) Bridgeport 2 Conn (1-2-4)
 Capitol Stage Lighting Co. Inc. 527 W 45 St. New York 36 NY (3)
 Central Electric Co. Fulton Mo (1-2-4)
 Century Lighting Inc. 521 W 43 St. New York 36 NY (3)
 Clement Electric Co. 223 Erie St. N W Grand Rapids 2 Mich (1)
 Cleveland Switchboard Co. 2925 E 79 St. Cleveland 4 Ohio (1-2-3)
 Columbia Electric Mfg Co. 275 Steuart St. San Francisco 5 Calif (1)
 Continental Electric Equipment Co. Box 1055 Cincinnati 1 Ohio (1-2-3)
 Control Panel Corp. 4431 W Division St. Chicago 51 Ill (1)
 Cutler-Hammer Inc. 228 N 12th St. Milwaukee 1 Wis (2)
 Delta-Star Electric Div. H K Porter Co. Inc. 2437 Fulton St. Chicago 12 Ill (1-2)
 Delta Switchboard Co. 605 W Fremont St. (P O Box 1995) Stockton Calif (1-2)
 Dixie Controller Inc. Post Office Box 6844 Birmingham 9 Ala (1-4)
 Electric Machinery Mfg Co. 800 Central Ave. Minneapolis 13 Minn (1-2)
 Empire Switchboard Co. Inc. 810 Fourth Ave. Brooklyn 32 NY (1-2-3-4)
 Esco Mfg Co. P O Box 1039 Greenville Tex (2)
 Federal Pacific Electric Co. 50 Paris St. Newark 5 NJ (2)
 Fouch Electric Mfg Co. Inc. 2138 N Interstate Ave. (P O Box 3978) Portland 8 Ore (2)

Gemco Electric Co. 25685 W Eight Mile Rd. Detroit 40 Mich (1)
 General Electric Co. Distribution Assemblies Dept. 41 Woodford Ave. Plainville Conn (1-2)
 General Electric Co. Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2)
 Gustavson Inc. 8600 Chestnut St. Kansas City 32 Mo (1-2)
 Hamden Engineering Corp. 99 Shaker Rd. East Longmeadow Mass (4)
 Hub Electric Co. 2255 W Grand Ave. Chicago 12 Ill (3)
 I-T-E Circuit Breaker Co. Bulldog Electric Products Div. 7610 Jos Campau Detroit Mich (2)
 I-T-E Circuit Breaker Co. Walker Div. P O Box 2384 Station D Atlanta Ga (1-2)
 Kato Engineering Co. 1442 First Ave. Mankato Minn (1)
 Kinney Electrical Mfg Co. 678 Buckeye St. Elgin Ill (2)
 Kliegl Bros Universal Electric Stage Lighting Co. Inc. 321 W 50 St. NY 19 NY (3)
 Kolton Electric Mfg Co. 123 New Jersey Railroad Ave. Newark 5 NJ (2)
 Lake Erie Electric Mfg Inc. 2952 W 22 St. Erie Pa (1-2-3)
 Lake Shore Electric Corp. 205 Willis St. Bedford Ohio (2)
 Leeds & Northrup Co. 4970 Stenton Ave. Phila 44 Pa (1)
 Leonard Electric Mfg Co. 3907 Perkins Ave. Cleveland 14 Ohio (3)
 Lexington Electric Products Co. Inc. 12 Chapel St. Newark 5 NJ (1-2-4)
 Lightalarm Electronics Corp. 10 W Houston St. New York 12 NY (3)
 Machinery Electrification Inc. 56 Hudson St. Northboro Mass (2)
 Major Equipment Co. Inc. 4603 W Fullerton Ave. Chicago 39 Ill (3)
 Marquette Electric Switchboard Co. 311 N Desplains St. Chicago 6 Ill (2)
 Metropolitan Electric Mfg Co. 2250 Steinway St. Long Island City 5 NY (1-2-3-4)
 Mullenbach Div. Electric Machinery Mfg Co. 2100 E 27 St. Los Angeles 58 Calif (2)
 Nelson Electric Mfg Co. P O Box 5385 Tulsa Okla (1-2)
 Parker Electrical Mfg Co. 221 Washington St. Oakland 7 Calif (2)
 Russell & Stoll Co. Inc. 125 Barclay St. NY 7 NY (2)
 Southern Electrical Equipment Co. 308 W Bland at Mint St. Charlotte 3 NC (2-4)
 Square D Co. Executive Plaza. Park Ridge Ill (2-3)
 Standard Electric Time Co. 89 Logan St. Springfield 2 Mass (4)
 Superior Electric Co. 383 Middle St. Bristol Conn (3)
 Viking Instruments Inc. East Haddam Conn (1)
 Walker Div. I-T-E Circuit Breaker Co. 125 Bennett St. NW Atlanta Ga (1-2)
 Westinghouse Electric Corp. P O Box 2278 Pittsburgh 30 Pa (1-2)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO. 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-3)—ADV PG 2nd Cover
 Wisconsin Electrical Mfg Co. Inc. 1825 S 72 St. Milwaukee 14 Wis (1-4)
 Young Electric & Mfg Co. Inc. 2134 Curtis Denver 5 Colo (1-2-3)
 Zinsco Electrical Products. 729 Turner. Los Angeles 12 Calif (1 thru 4)

3D. PANELS & PANELBOARDS

1. Service, lighting & power
2. Explosion-proof
3. Trailer park
4. Control

For circuit division and protection.

Adalet Mfg Co. 14300 Lorain Ave. Cleveland 11 Ohio (2)
 Adam (Frank) Electric Co. 3647 Windsor Pl. St. Louis Mo (1)
 Allen-Bradley Co. 136 W Greenfield Ave. Milwaukee 4 Wis (4)
 Alwalt Mfg Co. Inc. 1706 Lapham Dr. (P O Box 1171) Modesto Calif (1)
 Appleton Electric Co. 1701-59 Wellington Ave. Chicago 13 Ill (1)
 Automatic Control Co. 995 University Ave. St. Paul 4 Minn (1)
 Bryant Electric Co. 1421 State St. (Box D Barnum St.) Bridgeport 2 Conn (1-4)
 Central Electric Co. Fulton Mo (1-4)
 Clark Controller Co. 1146 E 152 St. Cleveland 10 Ohio (4)
 Cleveland Switchboard Co. 2925 E 79 St. Cleveland 4 Ohio (1)
 Continental Electrical Equipment Co. Box 1055 Cincinnati 1 Ohio (1)
 Control Panel Corp. 4431 W Division St. Chicago 51 Ill (4)
 ●CROUSE-HINDS CO. Syracuse 1 NY (2)—ADV PG 4th Cover
 Cutler-Hammer Inc. 228 N 12th St. Milwaukee 1 Wis (1-4)
 Delta Switchboard Co. 605 W Fremont St. (P O Box 1995) Stockton Calif (1-4)
 Empire Switchboard Co. Inc. 810 Fourth Ave. Brooklyn 32 NY (1)

Federal Pacific Electric Co. 50 Paris St. Newark 5 NJ (1)
 Fouch Electric Mfg Co. Inc. 2138 N Interstate Ave. (P O Box 3978) Portland 8 Ore (1)
 General Electric Co. Distribution Assemblies Dept. 41 Woodford Ave. Plainville Conn (1-4)
 General Electric Co. Industrial Sales Operation 1 River Road Schenectady 5 NY (1)
 ●GENERAL ELECTRIC SUPPLY CO. 1260 Boston Ave. Bridgeport Conn (1-2-3)—ADV PG 84-85
 General Switch Co. 45 Roebling St. Brooklyn 11 NY (1)
 Gustavson Inc. 8600 Chestnut St. Kansas City 30 Mo (1)
 Hoffman Engineering Corp. 1050 Tyler St. Anoka Minn (3)
 I-T-E Circuit Breaker Co. Bulldog Electric Products Div. 7610 Jos Campau Detroit Mich (1)
 I-T-E Circuit Breaker Co. Walker Div. P O Box 2384 Station D Atlanta Ga (1)
 Ideal Electric and Mfg Co. East First St. Mansfield Ohio (1-4)
 Killark Electric Mfg Co. 3940 Easton Ave. St. Louis 13 Mo (1-2)
 Kinney Electrical Mfg Co. 678 Buckeye St. Elgin Ill (1)
 Kolton Electric Mfg Co. 123 New Jersey Railroad Ave. Newark 5 NJ (1)
 Lake Erie Electric Mfg Inc. 2952 W 22 St. Erie Pa (1)
 Leonard Electric Mfg Co. 3907 Perkins Ave. Cleveland 14 Ohio (1)
 Lexington Electric Products Co. Inc. 12 Chapel St. Newark 5 NJ (1-4)
 Magnetics Inc. Box 391 Butler Pa (4)
 McKinstry Metal Works Inc. 285 McKinstry Ave. Chicopee Mass (1)
 Midwest Electric Products Inc. 1515 N Front St. Mankato Minn (3)
 Mullenbach Div. Electric Machinery Mfg Co. 2100 E 27 St. Los Angeles 58 Calif (1)
 Murray Mfg Corp. 1250 Atlantic Ave. Brooklyn 16 NY (1)
 Myers Electric Products Inc. 3019 S Vail Ave. Los Angeles 22 Calif (3)
 Nelson Electric Mfg Co. P O Box 5385 Tulsa Okla (1-2)
 Parker Electrical Mfg Co. 221 Washington St. Oakland 7 Calif (1-4)
 Pyle-National Co. 1344 N Kostner Ave. Chicago 51 Ill (1-2)
 Russell & Stoll Co. Inc. 125 Barclay St. NY 7 NY (1-2)
 Southern Electrical Equipment Co. 308 W Bland at Mint St. Charlotte 3 NC (4)
 Square D Co. Executive Plaza. Park Ridge Ill (1-2-4)
 United Enterprises. 15735 S Paramount Blvd. Paramount Calif (3)
 Wadsworth Electric Mfg Co. Inc. 20-34 W 11th St. (Box 272) Covington Ky (1)
 Westinghouse Electric Corp. P O Box 2278 Pittsburgh 30 Pa (1 thru 4)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO. 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1)—ADV PG 2nd cover
 Young Electric & Mfg Co. Inc. 2134 Curtis Denver 5 Colo (1)
 Zinsco Electrical Products. 729 Turner. Los Angeles 12 Calif (1-3-4)

3E. FRAMING & ENCLOSURES

Metal framing members, enclosures, and mounting structures for substation, switching, and control equipment.

Acme Steel Co. 135th St & Perry Ave. Chicago 27 Ill
 Chicago Wire Iron & Brass Works. 2411 W Belmont Ave. Chicago 18 Ill
 Continental Electric Equipment Co. Box 1055 Cincinnati 1 Ohio
 EMZA Metal Products Co. Box 408 Bridgeville Pa
 Empire Metal Box Co. Inc. 68 Meserole St. Brooklyn 6 NY
 Empire Switchboard Co. Inc. 810 Fourth Ave. Brooklyn 32 NY
 Falstrom Co. 62 Falstrom Ct. Passaic NJ
 FlexAngle Corp. 3760 Oakwood Ave. (P O Box 2434) Youngstown 9 Ohio
 Fouch Electric Mfg Co. Inc. 2138 N Interstate Ave. (P O Box 3978) Portland 8 Ore
 Gustavson Inc. 8600 Chestnut St. Kansas City 32 Mo
 Handy Angle Div. Lug-AH Co. 355 Lancaster Ave. Haverford Pa
 Hoffman Engineering Corp. 1050 Tyler St. Anoka Minn
 Hope Electrical Products Co. Inc. 27 Long Ave. Hillside NJ
 Huenefeld Co. Engineered Products Div. 2701 Spring Grove Ave. Cincinnati 25 Ohio
 I-T-E Circuit Breaker Co. Greensburg Div. P O Box 98 Greensburg Pa
 Keystone Mfg Co. 23328 Sherwood Rd. Warren Mich
 Kirk & Blum Mfg Co. 3120 Forrer St. Cincinnati 9 Ohio
 Lexington Electric Products Co. Inc. 12 Chapel St. Newark 5 NJ

McKinstry Metal Works Inc 285 McKinstry Ave
Chicopee Mass
Multi-A-Frame Corp 6401 Epworth Blvd Detroit 10
Mich
Parker Electrical Mfg Co 221 Washington St
Oakland 7 Calif
Power-Strut Div Van Huffel Tube Corp Dietz Rd
Warren Ohio
Queen Products Co Inc Thirteenth & Rowan Sts
Louisville 3 Ky
R & IE Equipment Div I-T-E Circuit Breaker Co
Greensburg Pa
Russell & Stoll Co Inc 125 Barclay St NY 7
NY
Spring City Electrical Mfg Co Spring City 85 Pa
Steel City Electric Co 1207 Columbus Ave Pitts-
burgh 33 Pa
Unistrut Products Co 933 Washington Blvd Chi-
cago 7 Ill
Versabar Corp 14 Whyte St Jersey City NJ
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa
Young Electric & Mfg Co Inc 2134 Curtis Denver
5 Colo

3F. PRIMARY SWITCHES

Switches (over 600v) for distribution pole lines,
structures and equipment.

Allen-Bradley Co 136 W Greenfield Ave Milwaukee
4 Wis
Chance (A B) Co 210 North Allen St Centralia
Mo
Continental Electric Equipment Co Box 1055 Cin-
cinnati 1 Ohio
Delta-Star Electric Div H K Porter Co Inc 2437
Fulton St Chicago 12 Ill
Electrical Engineers Equipment Co 25th Ave &
Division St Melrose Park Ill
Federal Pacific Electric Co 50 Paris St Newark
5 NJ
G & W Electric Specialty Co 3500 W 127 St Blue
Island Ill
General Electric Co Industrial Sales Operation 1
River Road Schenectady 5 NY
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY—ADV PG 2
I-T-E Circuit Breaker Co Greensburg Div P O
Box 98 Greensburg Pa
Joslyn Mfg & Supply Co 3700 S Morgan St Chi-
cago 9 Ill
Kearney (James R) Corp 4236 Clayton Ave St
Louis 10 Mo
Line Material Industries McGraw-Edison Co 700
W Michigan St Milwaukee Wis
Memco Engineering & Mfg Co Inc Commack LI
NY
Powercraft Corp 2215 De Kalb St St Louis 4
Mo
Powerdyne Inc 17150 Boones Ferry Rd Oswego
Ore
Royal Electric Mfg Co 1122 E 87 St Chicago
19 Ill
S & C Electric Co 6601 Ridge Blvd Chicago 26
Ill
Southern Electrical Equipment Co 308 West Bland
at Mint St Charlotte 3 NC
Square D Co Executive Plaza Park Ridge Ill
USCO Power Equipment Corp 829 N 36th Way
Birmingham 4 Ala
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa

3G. POWER SWITCHES

1. Automatic transfer
2. Dead-front switchboard
3. Isolating
4. Knife
5. Oil
6. Safety
7. Service entrance
8. Explosion-proof
9. Pressure-contact

Switches (600v and less) for power distribution
purposes.

Adalet Mfg Co 14300 Lorain Ave Cleveland 11
Ohio (8)
Adam (Frank) Electric Co 3647 Windsor Pl St
Louis Mo (2-4-6-7)
Allen-Bradley Co 136 W Greenfield Ave Milwau-
kee 4 Wis (1-5-8)
American Electric Switch Div Clark Controller Co
1146 E 152 St Cleveland 10 Ohio (6-7)
Anderson (Albert & JM) Mfg Co 289 A St Boston
10 Mass (4)
Arrow-Hart & Hegeman Electric Co 103 Hawthorn
St Hartford 6 Conn (6-7-8)
Automatic Switch Co 50-56 Hanover Rd Florham
Pk NJ (1)
Barber Electric Mfg Co Inc 318 Chestnut St N
Attleboro Mass (4-6-7)

Barkelew Electric Mfg Co 1905 Columbia Ave
Middletown Ohio (2-4-7-9)
Bryant Electric Co 1421 State St (Box D Barnum
Sta) Bridgeport 2 Conn (7)
Clark Controller Co 1146 E 152 St Cleveland 10
Ohio (4-8)
Connecticut Electric Mfg Co Main St Bantam
Conn (4)
Controls Co of America Control Switch Div 1420
Delmar Dr Folcroft Pa (8)
Crouse-Hinds Co Syracuse 1 NY (6)
Cutler-Hammer Inc 228 N 12th St Milwaukee 1
Wis (1-2-3-4-6-7-8)
Delta-Star Electric Div H K Porter Co Inc 2437
Fulton St Chicago 12 Ill (1-6)
Derrick Light Inc P O Box 9335 Houston Texas
(8)
Empire Metal Box Co Inc 68 Meserole St Brooklyn
6 NY (7)
Empire Switchboard Co Inc 810 Fourth Ave Brook-
lyn 32 NY (1 thru 5-7)
Esco Mfg Co P O Box 1039 Greenville Tex (5)
Federal Pacific Electric Co 50 Paris St Newark 5
NJ (6)
G & W Electric Specialty Co 3500 W 127 St Blue
Island Ill (1-5)
Gemco Electric Co 25685 W Eight Mile Rd De-
troit 40 Mich (8)
General Electric Co Industrial Sales Operation
1 River Road Schenectady 5 NY (1 thru 8)
General Switch Co 45 Roebling St Brooklyn 11
NY (6-7)

●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-4-5-6-7)—ADV PG 2

Hi Products Inc 7700 Wentworth Ave South Min-
neapolis 23 Minn (7)
Hoffman Engineering Corp 1050 Tyler St Anoka
Minn (4-7)
Hope Electrical Products Co Inc 27 Long Ave
Hillside NJ (8)
I-T-E Circuit Breaker Co 1900 Hamilton St Phila-
delphia 30 Pa (2)
I-T-E Circuit Breaker Co Bulldog Electric Prod-
ucts Div 7610 Jos Campau Detroit Mich
(2-6-7)
I-T-E Circuit Breaker Co Greensburg Div P O
Box 98 Greensburg Pa (3-7)
I-T-E Circuit Breaker Co Walker Div P O Box
2384 Station D Atlanta Ga (1-2-6-7)
Kearney (James R) Corp 4236 Clayton Ave St
Louis 10 Mo (3)
Killark Electric Mfg Co 3940 Easton Ave St Louis
13 Mo (6-7-8)
Kolton Electric Mfg Co 123 New Jersey Railroad
Ave Newark 5 NJ (4-6)
Lake Shore Electric Corp 205 Willis St Bedford
Ohio (1)
Kelek Co 59 Davis Ave Norwood Mass (7)
Lexington Electric Products Co Inc 12 Chapel St
Newark 5 NJ (1 thru 5-7)
Lumenite Electronic Corp 407 S Dearborn St
Chicago 5 Ill (1)
Metropolitan Electric Mfg Co 2250 Steinway St
Long Island City 8 NY (2-3-4-6-7)
Midwest Electric Products Inc 1515 N Front St
Mankato Minn (7)
Monitor Controller Div Atlee Corp 99 Grove
St Rockland Mass (1)
Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16
NY (6-7)
Palmer Electric & Mfg Co 24 Water St Wake-
field Mass (7)
Parker Electrical Mfg Co 221 Washington St
Oakland 7 Calif (2-6-7)
Powercraft Corp 2215 De Kalb St St Louis 4
Mo (3-4)
Pringle Electrical Mfg Co 1900-1912 N Sixth St
Philadelphia 22 Pa (3-4-7)
Pyle-National Co 1344 N Kostner Ave Chicago 51
Ill (6-8)
Rees (Mackworth G) Inc 1573 E Forest Ave De-
troit 7 Mich (6)
Russell & Stoll Co Inc 125 Barclay St NY 7
NY (8)
Sangamo Electric Co 11th & Converse Springfield
Ill (5)
Square D Co Executive Plaza Park Ridge Ill
(1-4-6-7-8)
Unimax Switch Div Maxson Electronics Corp Ives
Road Wallingford Conn (8)
Vickers Inc Electric Products Div 1847 Locust St
St Louis 3 Mo (1)
Wadsworth Electric Mfg Co Inc 20-34 W 11th
St (Box 272) Covington Ky (4-6-7)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1 thru 8)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gate-
way Center (Box 448) Pittsburgh 30 Pa (1-2-
3-4-5-6-7-8)—ADV PG 2nd cover
Young Electric & Mfg Co Inc 2134 Curtis Den-
ver 5 Colo (1-2-3-7)
●ZENITH ELECTRIC CO 155 W Walton St Chi-
cago 10 Ill (1)—ADV PG 116
Zinsco Electrical Products 729 Turner Los Angeles
12 Calif (2-6-7)

3H. CONTROLS & CONTROL SWITCHES

1. Centrifugal
2. Flashing
3. Flow
4. Foot-operated
5. Footmat-operated
6. Key-operated

7. Limit (lever, toggle or pushbutton)
8. Liquid level (float)
9. Mercury
10. Photoelectric
11. Pressure or vacuum
12. Remote control
13. Rotary top
14. Timing
15. Miniature & subminiature
16. Molded power cord
17. Snap
19. Proximity
20. Temperature sequence
21. Pressure sequence
22. Pushbuttons, door chime
23. Dashpots
24. Pushbutton switches, industrial
25. Toggle switches, industrial
26. Limit switches, explosion-proof
27. Continuous strip controls
28. Coin-operated

Physically actuated devices performing con-
trol functions through the energizing or de-
energizing of electrical circuits.

Abrams Instrument Corp 606 E Shawnee St
Lansing Mich (10-14)
Acme Fire Alarm Company Inc 106 Seventh Ave
New York 11 NY (8)
Acro Switch Div Robertshaw-Fulton Controls Co
2040 E Main St Columbus 16 Ohio (7-14-15)
Adams & Westlake Co 1025 N Michigan St Elk-
hart Ind (14)
Aemco Inc 10 State St Mankato Minn (2-14)
Aiken-Reed Inc 2802 Wollmer St Manitowac
Wis (14)
Aero Instrument Facility Northrop Corp-Ventura
11975 Sherman Way North Hollywood Calif (11)
Alcor Mfg Co 1140 S Seventh St De Kalb Ill
(3-15-17)
Allen-Bradley Co 136 W Greenfield Ave Milwau-
kee 4 Wis (4-6-7-8-11-12-13-14-24-25-26)
Almo Mfg Co Inc 618 Jersey Ave Union Beach
NJ (9)
American Klockner-Moeller Corp Box 5007 Tulsa
12 Okla (4-7-11-24)
American-Standard Controls Div 5900 Trumbull
Ave Detroit 8 Mich (11-20-21)
Anderson (W E) Inc 320 W 80 St Kansas City
14 Mo (3)
Arrow-Hart & Hegeman Electric Co 103 Hawthorn
St Hartford 6 Conn (13)
Automatic Control Co 995 University Ave St Paul
4 Minn (3-8-9-11-12-14)
Automatic Devices Div of Ametek Inc Sellersville
Pa (14-20-21)
Automatic Switch Co 50-56 Hanover Rd Florham
NJ (2-3-12)
Automation Products Inc 3030 Max Roy St Hous-
ton 24 Tex (8)
Automatic Timing & Controls Inc King of Prussia
Pa (11-12-14)
Autotron Inc 3629 N Vermilion St Danville Ill
(10-14)
B/W Controller Corp 2200 E Maple Rd Birming-
ham Mich (8)
Barkelew Electric Mfg Co 1905 Columbia Ave
Middletown Ohio (13)
Barksdale Valves 5125 Alcoa Ave Los Angeles 58
Calif (11)
Beckley Electric Co Inc 468-470 Grand Ave Brook-
lyn 38 NY (2)
Betts & Betts Corp Pomeroy Rd Woodbury Conn
(13-24-25-27)
Brasco Inc College & South Sts Piqua Ohio (12)
Brimco Motor Div Vocaline Co of America Inc
Coulter St Old Saybrook Conn (14)
Bryant Electric Co 1421 State St (Box D Barn-
um Sta) Bridgeport 2 Conn (25)
CBC Electronics Co Inc 2601 N Howard St
Philadelphia 33 Pa (12)
Cherry Electrical Products Corp 1650 Deerfield Rd
Highland Park Ill (17)
Cincinnati Time Recorder Co 1733 Central Ave
Cincinnati 14 Ohio (14)
Clark Controller Co 1146 E 152 St Cleveland 10
Ohio (4-6-7-12-24-25-26-27)
Clark-Cooper Co Inc 317 N Market St Palmyra
NJ (7)
Com-Pak-Ett Mfg Corp 650 Grand St Allegan
Mich (10)
Controls Co of America Controls Switch Div 1420
Delmar Dr Folcroft Pa (7-15)
Controls Co of America 2450 N 32 St Milwaukee
45 Wis (3-8-11-14-17)
Cooper Hewitt Electric Co Inc 720-732 Grand St
Hoboken NJ (11)
Cramer Div Giannini Controls Corp Old Saybrook
Conn (14)
Crouse-Hinds Co Syracuse 1 NY (2)
Custom Component Switches Inc 3137 Kenwood St
Burbank Calif (11)
Cutler-Hammer Inc 228 N 12th St Milwaukee 1
Wis (1-4-6-7-8-10-11-12-14-15-17-19-23-24-25-
26)
Delta-Star Electric Div H K Porter Co Inc 2437
Fulton St Chicago 12 Ill (13)
Denison (R B) Mfg Co 386 Broadway Bedford
Ohio (7-26)
Dietz (Henry G) Co Inc 12-16 Astoria Blvd Long
Island City 2 NY (3-8-11-14)
Dumont Mfg Co 1900 N Buffum St Milwaukee 1
Wis (10)
Dwyer (F W) Mfg Co Woodland at Greenwood
(P O Box 373) Michigan City Ind (11)

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New York 36, N.Y.

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330 W. 42nd St.
New York 36, N. Y.

Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (2)
Eastern Specialty Co 3617 N 8th St Phila 40 Pa (13)
Edco International Corp 20722 W Seven Mile Rd Detroit 19 Mich (14)
Edwards Co Inc Norwalk Conn (7-15-22-24-25)
Elastic Stop Nut Corp of America Elizabeth Div 1027 Newark Ave Elizabeth NJ (14)
Electric Switch Corp 2320 S Tibbs Ave P O Box 41037 Indianapolis 41 Ind (9-14)
Electrical Mfg Co 425 Lake Ave Racine Wis (4)
Electro Switch Corp King Ave Weymouth 88 Mass (13-15-17)
Electronic Control Corp 15341 Dale Detroit 23 Mich (10)
Electronics Corp of America One Memorial Dr Cambridge Mass (10-12-14-15)
Emerson-Rittenhouse Co Inc 68 East St Honeoye Falls NY (22)
Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (1-4-7-19-24)
Exide Industrial Marketing Div Electric Storage Battery Co Rising Sun & Adams Ave (P O Box 5723) Philadelphia 20 Pa (14)
Farmer Electric Products Co Inc 2300 Washington St Newton Lower Falls 62 Mass (10-14)
Fisher-Pierce Co 170 Pearl St South Braintree 85 Mass (10)
Fulton Siphon Div Robertshaw-Fulton Controls Co Box 400 Knoxville 1 Tenn (11)
Furnas Electric Co 1067 McKee St Batavia Ill (4-7-8-11-12-13-24)
Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (2)
Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (7)
General Control Co 1200 Soldiers Field Rd Boston 34 Mass (4-14)
General Controls Co 801 Allen Ave Glendale Calif (3-4-7-9-11-14)
General Electric Co Air Conditioning Dept Central Air Conditioner Troup Highway Tyler Tex (14)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (3-5 thru 8-10 thru 14-20-21-24-25-26)
General Services Co P O Box 612 Corvallis Ore (3-11)
Grayhill Inc 551 Hillgrove Ave La Grange Ill (13-15)
Haft & Sons Inc 950 Kent Ave Brooklyn 5 NY (2)
Hagen Mfg Co 104 Walnut St Baraboo Wis (14)
Haley Electronics Co 57 William St NY 5 NY (2-3-8-9-10-11)
Hanksraft Co Control Div Reedsburg Wis (14)
Hart Mfg Co 164 Bartholomew Ave Hartford Conn (12-13-17)
Haydon (A W) Co 232 N Elm St Waterbury Conn (2-12-14-15)
Haydon (A W) Co 4060 Ince Blvd Culver City Calif (2-14)
Hays Mfg Co Automatic Controls Div 12th and Liberty Sts Erie 6 Pa (3)
Healy-Ruff Co Water Level Controls Div 2255 University Ave St Paul 14 Minn (8-11-12)
Heat-Timer Corp 657 Broadway New York 12 NY (14)
Hobbs Div Stewart-Warner Corp Yale & Ash Sts (P O Box 358) Springfield Ill (11)
Hoffman Engineering Corp 1050 Tyler St Anoka Minn (10)
Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif (14)
Hughey & Phillips Inc 3200 North San Fernando Blvd Burbank Calif (12-10)
Hypco Engineering Inc 700 39th Ave N E Minneapolis 21 Minn (11)
Industrial Automation Corp 2415 W Montrose Ave Chicago Ill (2-9)
●INTERNATIONAL REGISTER CO 2620 W Washington Blvd Chicago 12 Ill (14)—ADV PG 121
Iron Fireman Mfg Co Electronics Div 2838 S E 9th Ave Portland 2 Ore (14)
Jo-Bell Products Inc 5456 W 111 St Oak Lawn Ill (8-19)
Jordan Electronics 121 S Palm Ave Alhambra Calif (14)
Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio (16-18-24)
Kim Lighting & Mfg Co Inc 1467 N Lidcombe Ave El Monte Calif (8)
Kneisley Electric Co 2501-2509 Lagrange St Toledo 3 Ohio (13)
Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (2)
Leach Corp 18435 Susana Rd Compton Calif (14-15)
Ledex Inc 123 Webster St Dayton 2 Ohio (12)
Lee Electric Inc 566 52nd St West New York NJ (22)
Leviton Mfg Co Inc 236 Greenpoint Ave Brooklyn 22 NY (2-7)
Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (13)
Licon Switch & Control Div Illinois Tool Works Inc 6615 W Irving Pk Rd Chicago 34 Ill (7-15-18)
Lightguard Electronic Mfg Co Inc 1213 St Emanuel Houston 3 Tex (10)
Line Electric Co 229 River St Orange NJ (4)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (10)
Linemaster Switch Corp Woodstock Conn (4)
Machinery Electrification Inc 56 Hudson St Northboro Mass (8-10-14-19)
Magnetrol Inc 5300 Belmont Rd Downers Grove Ill (3-8)

Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind (13-14)
Manning Maxwell & Moore Inc 250 E Main St Stratford Conn (8-11-12)
Marco Industries 207 S Helena St (P O Box 110) Anaheim Calif (24)
McCorrie (D H) Co Box 93 Station A Berkeley Calif (14-20)
McDermott (Julian A) Corp 1639 Stephen St Ridgewood 27 NY (2)
McDonnell & Miller Inc 3500 N Spaulding Ave Chicago 18 Ill (3-8)
Mechanical Products Inc 1824 River St Jackson Mich (20)
Merco Corp 4201 W Belmont Ave Chicago 41 Ill (3-8-9-11)
Micro Balancing Inc 191 Herricks Rd Garden City Park NY (10)
Micro Switch Div of Minneapolis-Honeywell Regulator Co Chicago & Spring Freeport Ill (4-7-9-12-13-15)
Midwest Electric Products Inc 1515 N Front St Mankato Minn (14)
Miller Harris Instrument Co 1134 S First St Milwaukee 4 Wis (14)
Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (11-14)
Monitor Controller Div Atlee Corp 99 Grove St Rockland Mass (7)
Mossman (Donald P) Inc P O Box 265 Brewster NY (7-24)
Nankervis (Geo L) Co 15300 Fullerton Ave Detroit 27 Mich (7)
National Acme Co Electrical Controls Div 170 E 131 St Cleveland 8 Ohio (7-8-15-17-24-26)
National Time & Signal Corp 21800 Wyoming Ave Detroit 37 Mich (14)
National Tool & Mfg Co 100 N 12 St Kenilworth NJ (25)
Network Industries Inc P O Box 397 Bayonne NJ (17-25)
Noel Mfg Co 3 W 18 St New York 11 NY (2)
Ohmite Mfg Co 3601 Howard St Skokie Ill (13)
Paragon Electric Co Inc 1600 12th St Two Rivers Wis (14)
Partlow Corp 230 Campion Rd New Hartford NY (7-14-20)
Partridge & Wilkins Co 51 N Seventh St Phila 6 Pa (5-6)
Penn Controls Inc Goshen Ind (3-8-11)
Photobell Co Inc 12 E 22 St New York 10 NY (10)
Photomation Inc 280 Polaris Ave Mountain View Calif (10)
Post Electronic Products 12 Lothrop St Beverly Mass (10-14)
Powert Switch Co 36 Pleasant St Watertown Mass (9)
Precision Multiple Controls Inc 1250 E Ridgewood Ave Ridgewood NJ (10)
Precision Products & Controls Inc 6116 E 15th St Tulsa 12 Okla (14)
Progress Mfg Co Inc Castor Ave & Tulip St Philadelphia 34 Pa (10)
Recora Co Inc Powis Rd (Box 68) St Charles Ill (4-5)
Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (4-6-7-24)
Reliance Time Controls Inc 1927 Mead St Racine Wis (14)
Reynolds Electric Co 3000 River Rd River Grove Ill (2)
Rhodes (M H) Inc 30 Bartholomew Ave Hartford 6 Conn (14)
Ripley Co Inc Factory St Middletown Conn (10)
Robot Industries Inc 7041 Orchard St Dearborn Mich (5)
Rodale Mfg Co Inc 6th & Minor St Emmaus Pa (2-22)
Roth Controls Inc Box 900 Evanston Ill (10)
Sangamo Electric Co 11th & Converse Springfield Ill (7-14)
Sargent Electric Corp 630 Merrick Rd Lynbrook NY (7)
Scalco Controls Inc P O Box 41 Delanco NJ (11-12-15)
Screayco Mfg Co 201 Greene Ave Middlesex NJ (3)
Seely Instrument Co Inc 377 Fourth St (P O Box 387) Niagara Falls NY (14)
Shallcross Mfg Co Preston St Selma NC (7-13)
Sieglar Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (10-12)
Sierra Electric Corp 15100 S Figueroa St (P O Box 85) Gardena Calif (6-9-12-17-25)
Solar Sonic Devices Inc Box 65 Hicksville LI NY (2-10-14)
Spier Electronics Inc 1949 McDonald Ave Brooklyn 23 NY (2)
Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn (3-8)
Square D Co Executive Plaza Park Ridge Ill (4-6-7-8-11-12-13-14-17-19-24-26)
Standard Electric Time Co 89 Logan St Springfield 2 Mass (14)
Star-A-Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (2)
Supreme Electric Products Co 194 Vassar St Rochester 7 NY (14)
Tapeswitch Corp of America 229-24 Linden Blvd Cambria Heights (4-5-27)
Technical Electronics Co 4060 Ince Blvd Culver City Calif (14)
Tigerman Engineering Co 4332 N Western Ave Chicago 18 Ill (9)

Tork Time Controls Inc 1000 Grove St Mt Vernon NY (14)
Trimount Instrument Div General Controls Co 2000 S Wolf Rd Des Plaines Ill (19)
Trine Mfg Corp 1430 Ferris Place New York 61 NY (22)
Unimax Switch Div Maxson Electronics Corp Ives Road Wallingford Conn (4-7-15-17-24-25-26)
United Electric Controls Co 85 School St Watertown 72 Mass (11-12-17-20-26)
Vemaline Products Co 511 Commerce St Franklin Lake NJ (4-14)
Versa Tool Mfg Co Inc Lake Ave at Fourth St Racine Wis (4)
Viking Instruments Inc East Haddam Conn (2-3-8-11)
Wallace & Tiernan Inc 25 Main St Belleville NJ (2-11)
Walser Automatic Timer Corp 420 Lexington Ave New York 17 NY (14)
Warrick (Chas F) Co 1964 W Eleven Mile Rd Berkeley Mich (8)
Webster Electric Co 1900 Clark St Racine Wis (14)
Welcome Meter Co 1540 Olympic Blvd Montebello Calif (14-28)
Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (14)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-7-9-11-12-14-15-17-19-24-25-26)
Westinghouse Electric Corp Standard Control Div Beaver Pa (7)
White-Rodgers Co 9797 Reavis Rd St Louis 23 Mo (7-11-12)
Wilson (G C) & Co 1035 26th St Huntington W Va (14)
Winterburn Mfg Co P O Box 386 Putnam Conn (3)
Workrite Mfg Co 612-620 Colorado Ave Santa Monica Calif (11)
●ZENITH ELECTRIC CO 155 W Walton St Chicago 10 Ill (12-14)—ADV PG 116

33. EQUIPMENT SWITCHES & CONTROLS

1. Appliance switches
2. Battery switches & charging controls
3. Door & gate openers
4. Electric fence controllers
5. Electrolighting controls
6. Generator controls
7. Heating system & temperature controls
8. Light dimmers
9. Street-lighting controls
10. Switch-operating mechanisms
11. Welder controls
12. Crane controls
13. Pump controls

Devices intended for use with specific items of equipment.

ACF Industries Inc ACF Electronics Div Riverdale Md (8)
Acme Wire Co Utility Products Div 1255 Dixwell Ave New Haven Conn (9)
Acro Switch Div Robertshaw-Fulton Controls Co 2040 E Main St Columbus 16 Ohio (1-7)
Aiken-Reed Inc 2802 Wollmer St Manitowac Wis (10)
Ajax Electric Co 954 Frankford Ave Phila 23 Pa (7)
Alcor Mfg Co 1140 S Seventh St De Kalb Ill (1)
Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (2-6-7-12-13)
Alliance Mfg Co Inc Lake Park Blvd Alliance Ohio (3)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (6-13)
American Kloeckner-Moeller Corp Box 5007 Tulsa 12 Okla (13)
American-Standard Air Conditioning Div Electric Heating Dept 40 W 40 St New York 18 NY (7)
American-Standard Controls Div 5900 Trumbull Ave Detroit 8 Mich (1-7)
Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY (7)
Arjac Products Inc 55-59 Halstead St Rochester 10 NY (4)
Ark-Les Switch Corp 51 Water St Watertown Mass (1)
Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (1)
Assembly Products Inc Chesterland 31 Ohio (7)
Atlas Overhead Door Co Mill St at Reading Railroad Quakertown Pa (3)
Automatic Control Co 995 University Ave St Paul 4 Minn (7-10)
Automatic Devices Div of Ametek Inc Sellersville Pa (7)
Berko Electric Mfg Corp 182-20 Liberty Ave Jamaica 12 NY (7)

Bramco Inc College & South Sts Piqua Ohio (3)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (1-8)
 Burling Instrument Co Inc 26 River Rd Chatham NJ (7)
 Capitol Stage Lighting Co Inc 527 W 45 St New York 36 NY (8)
 Celheat Inc 5212 Homburg Drive (P O Box 10066) Knoxville Tenn (7)
 Century Lighting Inc 521 W 43 St New York 36 NY (8)
 Circle F Mfg Co 720 Monmouth St Trenton 4 NJ (1-2)
 Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (8)
 Columbia Electric Mfg Co 4519 Hamilton Ave Cleveland 14 Ohio (5)
 Connecticut Electric Mfg Co Main St Bantam Conn (2)
 Continental-Wirt Electronics Corp 26 W Queen Lane Philadelphia 44 Pa (2)
 Controls Co of America 2450 N 32 St Milwaukee 45 Wis (1-7-10)
 Crane (H W) Co 15 N 9th Ave Maywood Ill (3)
 Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (1-7-8-10-12-13)
 Day-Ray Products Inc 1133 Mission St South Pasadena Calif (8)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (10)
 Delta Switchboard Co 605 W Fremont St (P O Box 1995) Stockton Calif
 Dixie Controller Inc Post Office Box 5844 Birmingham 9 Ala (2-13)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1)
 Easy-Heat Inc 209 E Michigan St New Carlisle Ind (7)
 Ebert Electronics Corp 212-26 Jamaica Ave Queens Village 28 LI NY (9)
 Edco International Corp 20722 W Seven Mile Rd Detroit 19 Mich (11)
 Ederer Engineering Co 2943 1st Ave S Seattle 4 Wash (12)
 Edwards Co Inc Norwalk Conn (3)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (6)
 Electric Power Door Co Inc 2127 E Lake St Minneapolis 7 Minn (3)
 Electric Service Systems Inc 5555 Highway S West Minneapolis 24 Minn (4)
 Electro-Solid Controls Inc 8001 Bloomington Free-way Minneapolis 20 Minn (8)
 Electronic Control Corp 15341 Dale Detroit 23 Mich (3)
 Electronics Corp of America One Memorial Dr Cambridge Mass (3-9)
 Electrovector Inc 475 Flushing Ave Brooklyn 5 NY (7)
 Engelhard Industries Inc Industrial Equipment Div Instruments & Systems Sec 850 Passaic Ave East Newark NJ (7)
 Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (12)
 Everwarm Inc 3600 Pleasant Ridge Rd Knoxville Tenn (7)
 Exide Industrial Marketing Div Electric Storage Battery Co Rising Sun & Adams Ave (P O Box 5723) Philadelphia 20 Pa (2)
 Federal Pacific Electric Co 50 Paris St Newark 5 NJ (1)
 Fenwal Inc Pleasant St Ashland Mass (7)
 Fier-Pierce Co 170 Pearl St South Braintree 85 Mass (9)
 Friez Instrument Div Bendix Aviation Corp Baltimore 4 Md (7)
 Fulton Syphon Div Robertshaw-Fulton-Controls Co Box 400 Knoxville 1 Tenn (7)
 General Controls Co 801 Allen Ave Glendale Calif (7)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-5-6-7-9 thru 13)
 General Services Co P O Box 612 Corvallis Ore (13)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1-7)
 Guardian Electric Mfg Co 1550 W Carroll Ave Chicago 7 Ill (1)
 H-B Instrument Co American & Bristol Sts Philadelphia 40 Pa (7-9)
 Halo Lighting Products Inc 4201 Grand Ave Chicago 51 Ill (8)
 Hanksraft Co Control Div Reedsburg Wis (7)
 Hannsfeffer Corp 4400 W National Ave Milwaukee 46 Wis (12)
 Hart Mfg Co 164 Bartholomew Ave Hartford Conn (1-7)
 Healy-Ruff Co Water Level Controls Div 2255 University Ave St Paul 14 Minn (13)
 Howell Mfg Co 21 N Morehall Rd Paoli Pa (3)
 Hubbell (Harvey) Inc State St & Bostwick Ave Bridgeport 2 Conn (1-8)
 Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif (11)
 Ideal Electric and Mfg Co East First St Mansfield Ohio (6)
 Illinois Testing Laboratories Inc 420 N LaSalle St Chicago 10 Ill (7)
 Industrial Electric Switches of Indiana Box 218 New Augusta Ind (11)
 International Electric Fence Co Inc Box 650 Albert Lea Minn (4)
 Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (9)
 Kato Engineering Co 1442 First Ave Mankato Minn (6)

Kliegl Bros Universal Electric Stage Lighting Co Inc 321 W 50 St NY 19 NY (8)
 Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (2)
 Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (8)
 Lake Shore Electric Corp 205 Willis St Bedford Ohio (6)
 Leach Corp 18435 Susana Rd Compton Calif (6-8)
 Leviton Mfg Co Inc 236 Greenpoint Ave Brooklyn 22 NY (1-2)
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (11)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (9)
 Magnetrol Inc 5300 Belmont Rd Downers Grove Ill (13)
 Marquette Electric Switchboard Co 311 N Desplaines St Chicago 6 Ill (6)
 Marsh Instrument Co 3501 Howard St Skokie Ill (7)
 McCorkle (D H) Co Box 97 Station A Berkeley Calif (7)
 McDonnell & Miller Inc 3500 N Spaulding Ave Chicago 18 Ill (13)
 McLarty Systems 2600 Dickman Rd Battle Creek Mich (7)
 Memco Engineering & Mfg Co Inc Commack LI NY (10)
 Mercoid Corp 4201 W Belmont Ave Chicago 41 Ill (7)
 Micro Balancing Inc 191 Herricks Rd Garden City Pk NY (9)
 Micro Switch Div of Minneapolis-Honeywell Regulator Co Chicago & Spring Freeport Ill (1)
 Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (7-8)
 Minneapolis-Honeywell Regulator Co Boston Div 40 Life St Boston 35 Mass (7)
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windrim Aves Phila 44 Pa (7)
 Modernheat Cable Corp P O Box 754 Kingsport Tenn (7)
 National Cathode Corp 317 E 34 St New York 16 NY (8)
 Network Industries Inc P O Box 397 Bayonne NJ (1)
 Palmer Electric & Mfg Co 24 Water St Wakefield Mass (7)
 Partlow Corp 230 Campton Rd New Hartford NY (7)
 Pass & Seymour Inc Syracuse 9 NY (1)
 Penn Controls Inc Goshen Ind (7-13)
 Photobell Co Inc 12 E 22 St New York 10 NY (9)
 Precision Products & Controls Inc 6116 E 15th St Tulsa 12 Okla (10)
 Precision Thermometer & Instrument Co 1434 Brandywine St Philadelphia 30 Pa (7)
 Progress Mfg Co Inc Castor Ave & Tulip St Philadelphia 34 Pa (8)
 Quincy Mfg Co Box 916 Tiffin Ohio (3)
 Rhodes (M H) Inc 30 Bartholomew Ave Hartford 6 Conn (1)
 Richards-Wilcox Mfg Co 150 Third St Aurora Ill (3)
 Ripley Co Inc Factory St Middletown Conn (9)
 Roberson Inc 1539 NE 103 St Seattle 55 Wash (7)
 Robot Industries Inc 7041 Orchard St Dearborn Mich (3)
 Robotron Corp 21300 W Eight Mile Rd Detroit 19 Mich (11)
 Roth Controls Inc Box 900 Evanston Ill (9)
 Sair Corp 5290 S Main St Akron 19 Ohio (7)
 Sargent Electric Corp 650 Merrick Rd Lynbrook NY (1)
 Seaco Controls Inc P O Box 41 Delanco NJ (7)
 Shox-Stok Inc Wellington Ohio (4)
 Siegler Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (2-6-8)
 Sierra Electric Corp 15100 S Figueroa St (P O Box 85) Gardena Calif (8)
 Signet Controls 3205 S E 13th Ave Portland 2 Ore (7)
 Simplex Co Inc 1139-41 N MacArthur Blvd Springfield Ill (6)
 Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (1-8)
 Smith-Gates Corp Farmington Conn (7)
 Square D Co Executive Plaza Park Ridge Ill (3-8-11-12-13)
 Square D Co Electric Controller & Mfg Div 4493 Lee Rd Cleveland 28 Ohio (12)
 Stackpole Carbon Co Stackpole St St Marys Pa (1)
 Sunwarm Inc 1601 Jared Dr (P O Box 266) Kingsport Tenn (7)
 Superior Electric Co 383 Middle St Bristol Conn (8)
 Swan Mfg Co 1801 W 26 St Vancouver Wash (7)
 Tapeswitch Corp of America 229-24 Linden Blvd Cambria Heights 11 NY (3)
 Taylor-Winfield Corp 1052 Mahoning Ave N W Warren Ohio (11)
 Thermolyne Corp 513 Huff St Dubuque Iowa (7)
 Tocco Div Ohio Grankshift Co 3800 Harvard Ave Cleveland 5 Ohio (6)
 Tower Mfg Corp 158 Pine St Providence 3 RI (1)
 Trine Mfg Corp 1430 Ferris Pl New York 61 NY (3)
 Ulanet (George) Co 413-15 Market St Newark 5 NJ (1-7)
 Unimax Switch Div Maxon Electronics Corp Ives Road Wallingford Conn (1)
 United Electric Controls Co 85 School St Watertown 72 Mass (11)

Universal Welder Corp 3537 Lee Rd Cleveland 20 Ohio (11)
 Velotron Inc 1186 Broadway New York 1 NY (7)
 Wallace & Tiernan Inc 25 Main St Belleville NJ (13)
 Ward Leonard Electric Co 28 South St Mount Vernon NY (8)
 Waukesha Motor Co Waukesha Wis (6)
 Weksler Instruments Corp 195 E Merrick Rd Freeport L I NY (7)
 Welcome Meter Co 1540 Olympic Blvd Montebello Calif (5)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (6-7-11)
 Wesix Electric Heater Co 390 First St San Francisco 5 Calif (7)
 West Instrument Corp 4363 W Montrose Ave Chicago 41 Ill (7)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-6 thru 13)
 White-Rodgers Co 9797 Reavis Rd St Louis 23 Mo (7)
 Wisconsin Electrical Mfg Co Inc 1825 S 72 St Milwaukee 14 Wis (6-11-12-13)
 Yardney Electric Corp 40-50 Leonard St New York 13 NY (7)

3K SPECIAL-FUNCTION CONTROLS

1. Field-discharge switches
2. Frequency controls
3. Interlocks & electric locks
4. Magnetic amplifiers
5. Program clock systems
6. Saturable reactors
7. Servo components
8. Solenoids
9. Static controls
10. Electric brakes & clutches
11. Valves (electrically operated)
12. Carrier system controls
13. Machine & process controls
14. Permanent magnets
15. Peak load controls
16. Electromagnets
17. Central industrial control systems
18. Flame safeguard equipment
19. Rotary switches, industrial
20. Stepping switches
21. Level-indicating systems
22. Infrared detector controls

Devices intended to accomplish specialized control functions.

Abrams Instrument Corp 606 E. Shiawasee St Lansing Mich (8)
 Acme Electric Corp 45 Water St Cuba NY (6)
 Acro Switch Div Robertshaw-Fulton Controls Co 2040 E Main St Columbus 16 Ohio (15)
 Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (8-13-14-19)
 Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (2)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-2-4-6-7-9-10-11-19)
 American Rectifier Corp 95 Lafayette St NY 13 NY (10)
 American-Standard Controls Div 5900 Trumbull Ave Detroit 8 Mich (11)
 Atomkatic Valve Co Inc 545 W Abbott St Indianapolis Ind (11)
 Auth Electric Co Inc 34-20 45th St LIC 1 NY (5)
 Automatic Control Co 995 University Ave St Paul 4 Minn (5-7)
 Automatic Devices Div of Ametek Inc Sellersville Pa (5)
 Automatic Electric Sales Corp Northlake Ill (13-17-19-20)
 Automatic Switch Co 50-56 Hanover Rd Florham Pk NJ (1-8-11)
 Automatic Timing & Controls Inc King of Prussia Pa (5-13-17)
 B/W Controller Corp 2200 E Maple Rd Birmingham Mich (8)
 Bailey Meter Co 1050 Ivanhoe Rd Cleveland 10 Ohio (21)
 Barkelew Electric Mfg Co 1905 Columbia Ave Middletown Ohio (1)
 Barksdale Valves 5125 Alcoa Ave Los Angeles 58 Calif (11)
 Berkshire Transformer Corp Kent Conn (6)
 Boppe Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (4-7)
 Brach Mfg Corp 200 Central Ave Newark 3 NJ (4)
 Bramco Inc College & South Sts Piqua Ohio (2-12)
 Bush Transformer Corp 707 North St Endicott NY (6)
 Caltron Products Co 3518 W Pico Blvd Los Angeles 19 Calif (8-11)
 Central Transformer Co 900 W Jackson Blvd Chicago 7 Ill (6)
 Cincinnati Time Recorder Co 1733 Central Ave Cincinnati 14 Ohio (5)
 Clark Controller Co 1146 E 152 St Cleveland 10 Ohio (9-10-11-13-19)
 Comar Electric Co 3349 W Addison Chicago 18 Ill (8)
 Controls Co of America Control Switch Div 1420 Delmar Dr Folcroft Pa (3)

Controls Co of America 2450 N 32 St Milwaukee 45 Wis (8-11)
 Crittenden Transformer Works Inc 13011 S Spring St Los Angeles 61 Calif (6)
 Crucible Steel Co of America Box 88 Pittsburgh 30 Pa (14)
 Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (3-5-8-10-12-16-17-19)
 Dage Div Thompson Ramo Wooldridge Inc 455 Sheridan Ave Michigan City Ind (13)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (3)
 DeWalt Inc Fountain Ave Lancaster Pa (10)
 Dietz (Henry G) Co Inc 12-16 Astoria Blvd Long Island City 2 NY (2)
 Dings Brakes Inc 4740 W Electric Ave Milwaukee 46 Wis (10)
 Dixie Controller Inc Post Office Box 5844 Birmingham 9 Ala (9-13-17-21)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (4-6-9)
 Dormeyer Industries 3418 Milwaukee Ave Chicago 41 Ill (6-8)
 Dossier Mfg Corp 249-255 Huron St Brooklyn 22 NY (3)
 Dynamic Div Eaton Mfg Co 3122 14th Ave Kenosha Wis (10)
 Eder Engineering Co 2943 1st Ave S Seattle 4 Wash (10)
 Edwards Co Inc Norwalk Conn (5)
 Electran Mfg Co 1901 Clybourn Ave Chicago 14 Ill (6)
 Electric Regulator Corp Norwalk Conn (2-4-6-7-9)
 Electrical Windings Inc 2015 N Kolmar Ave Chicago 39 Ill (6)
 Electro Engineering Works 401 Preda St San Leandro Calif (6)
 Electro-Solid Controls Inc 8001 Bloomington Freeway Minneapolis 20 Minn (7-9)
 Electronics Corp of America One Memorial Dr Cambridge Mass (3)
 Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (13-21-22)
 Faraday Inc 2011 W Beecher Rd Adrian Mich (5)
 Federal Sign & Signal Corp 13626 S Western Ave Blue Island Ill (5)
 Fidelity Instrument Corp 1000 E Boundary Ave York Pa (4-9)
 Fischer & Porter Co 335 Westminster Rd Hatboro Pa (11)
 Fulton Sylphon Div Robertshaw-Fulton Controls Co Box 400 Knoxville 1 Tenn (11)
 Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (4-6-7)
 General Controls Co 801 Allen Ave Glendale Calif (8-11)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 4-6 thru 10-12-13-15-17-19-20-21)
 General Hardware Mfg Co Inc 80 White St New York 13 NY (14)
 General Services Co P O Box 612 Corvallis Ore (13)
 Guardian Electric Mfg Co 1550 W Carroll Ave Chicago 7 Ill (8-11)
 Hagen Mfg Co 104 Walnut St Baraboo Wis (13)
 Hanksraft Co Control Div Reedsburg Wis (15)
 Harder (Donald C) Co 2580 K St San Diego 2 Calif (4)
 Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (10)
 Haydon (A W) Co 232 N Elm St Waterbury Conn (19-20)
 Hays Mfg Co Automatic Controls Div 12th and Liberty Sts Erie Pa (3-8-11)
 Hevi Duty Electric Co 3002 W Burrell St P O Box 563 Milwaukee 1 Wis (6)
 Hewson Co Inc 115 Maple St Summit NJ (9)
 IAC Magnetics Corp 570 Main St Westbury NY (7)
 I-T-E Circuit Breaker Co Greensburg Div P O Box 98 Greensburg Pa (3)
 International Business Machines Corp Times Equipment Div 590 Madison Ave New York 22 NY (5-12)
 International Register Co 2620 W Washington Blvd Chicago 12 Ill (5)
 Laurence (R G) Co Inc 122 Summit St Tenafly NJ (8-11)
 Leach Corp 18435 Susana Rd Compton Calif (4-9)
 Leder Inc 123 Webster St Dayton 2 Ohio (8-19-20)
 Leeds & Northrup Co 4970 Stenton Ave Phila 44 Pa (2-6)
 Lindberg Engineering Co 2450 W Hubbard St Chicago 12 Ill (6)
 Magnatrol Valve Corp 67 Fifth Ave Hawthorne NJ (11)
 Magnetics Inc Box 391 Butler Pa (4-6-9)
 Manning Maxwell & Moore Inc 250 E Main St Stratford Conn (11)
 Max-A-Loc Inc El Monte Calif (3)
 Mercoid Corp 4201 W Belmont Ave Chicago 41 Ill (11)
 Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (5-7-11-13-18)
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windrim Aves Phila 44 Pa (2-7-11-13-17-18)
 National Acme Co Electrical Controls Div 170 E 131 St Cleveland 8 Ohio (8)
 National Time & Signal Corp 21800 Wyoming Ave Detroit 37 Mich (5)
 Naylor (E V) Laboratories Inc 26 Manorhaven Blvd Port Washington NY (8)
 Nothelfer Winding Labs Inc 220 Ewingville Rd P O Box 455 Trenton 3 NJ (6)

Oviatt (D C) Co 2174 Lakeside Ave Cleveland 14 Ohio (13)
 Panellit Div ISI Inc 7401 N Hamlin Ave Skokie Ill (17)
 Permanent Magnet Co Inc 4437 Bragdon St Lawrence 26 Ind (14)
 Phillips Mfg Co Inc 8200 Grand Ave Minneapolis 20 Minn (8)
 Precision Products & Controls Inc 6116 E 15th St Tulsa 12 Okla (5-13)
 R & IE Equipment Div I-T-E Circuit Breaker Co Greensburg Pa (3)
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn (4-6)
 Refrigerating Specialties Co 3004 W Lexington St Chicago 12 Ill (11)
 Regent Controls Inc 101 Harvard Ave Stamford Conn (9-13-17-21-22)
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (4-7)
 Reuland Electric Co 3001 W Mission Rd Alhambra Calif (10)
 Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY (4-6)
 Ross Operating Valve Co 120 E Golden Gate Ave Detroit 3 Mich (11)
 Ruggles-Klingemann Mfg Co Foster Court Salem Mass (11)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (3)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (10)
 Shrader (FW) Co 11623 S Broadway Los Angeles 61 Calif (14-16)
 Siegler Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (4-6-7-11)
 Sierra Electric Corp 15100 S Figueroa St P O Box 85 Gardena Calif (20-22)
 Simmonds Precision Products Inc Tarrytown NY (21)
 Simplex Time Recorder Co 24 S Lincoln St Gardner Mass (5)
 Skinner Precision Industries Inc Skinner Electric Valve Div 95 Edgewood Ave New Britain Conn (11)
 Sorensen & Co Richards Ave South Norwalk Conn (4-6)
 ●SORGEL ELECTRIC CO 8388 W National Ave Milwaukee 4 Wis (6)—ADV PG 94, 99, 102
 Square D Co Executive Plaza Park Ridge Ill (9-10-11-13-16)
 Square D Co Electric Controller & Mfg Div 4493 Lee Rd Cleveland 28 Ohio (4-10-16)
 Southwestern Industrial Electronics Co 10201 Westminster (P O Box 22187) Houston 27 Tex (4-6)
 Stackpole Carbon Co Stackpole St St Marys Pa (14)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (5)
 Stearns Electric Corp 120 N Broadway Milwaukee 2 Wis (10)
 Stonite Coil Corp US Hwy 130 Yardville NJ (8)
 Stromberg Div General Time Corp 135 S Main St Thomaston Conn (5)
 Superior Electric Co 383 Middle St Bristol Conn (4)
 Superior Interlock Corp 73-39 Central Ave Glendale 27 NY (3)
 Supreme Electric Products Co 194 Vassar St Rochester 7 NY (11)
 Taylor-Winfield Corp 1052 Mahoning Ave NW Warren Ohio (11)
 Telex/Lumen Inc P O Box 905 Joliet Ill (4)
 Trimount Instrument Div General Controls Co 2000 S Wolf Rd Des Plaines Ill (21)
 Trio Laboratories Inc Dupont St Plainville NY (3)
 Trombetta Solenoid Corp 329 N Milwaukee St Milwaukee 2 Wis (8)
 Turbo Machine Co Lansdale Pa (13)
 Unimax Switch Div Maxson Electronics Corp Ives Road Wallingford Conn (3)
 United Electric Controls Co 85 School St Watertown 72 Mass (13)
 United States Electronics Corp 275 Warren St Lyndhurst NJ (8)
 United Transformer Co 150 Varick St New York 13 NY (6)
 Versabar Corp 14 Whyte St Jersey City NJ (10)
 Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo (4-10)
 Viking Instruments Inc East Haddam Conn (11)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (2-3-9)
 Werner Electric Brake & Clutch Co Beloit Wis (10)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 4-6 thru 14-16-17-20)
 White-Rodgers Co 9797 Reavis Rd St Louis 23 Mo (11)
 Wisconsin Electrical Mfg Co Inc 1825 S 72 St Milwaukee 14 Wis (13-17)
 Yellow Springs Instrument Co Inc P O Box 106 Yellow Springs Ohio (17)
 ●ZENITH ELECTRONIC CO 155 W Walton St Chicago 10 Ill (5)—ADV PG 116

3L. LOW-VOLTAGE CONTROL SYSTEMS

Low-voltage relays, switches and power sources for control of lighting and appliance loads from multiple locations.

Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY

Bryant Electric Co 1421 State St (Box D Barnum St) Bridgeport 2 Conn
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI
 Sierra Electric Corp 15100 S Figueroa St (P O Box 85) Gardena Calif
 Touch-Plate Mfg Corp Box 1970 Long Beach Calif

3M. MOTOR CONTROLS

1. Disconnect switches
2. Drum switches & controllers
3. Magnetic contactors
4. Magnetic starters
5. Manual starters
6. Pushbutton stations
7. Speed regulators & controls
8. Motor control centers
9. Starters, explosion-proof
10. Pushbutton stations, oiltight

Starting, stopping and control equipment for motor circuits.

Acme Electric Corp 45 Water St Cuba NY (7)
 Adalet Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (9)
 Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (8)
 Allen-Bradley Co 136 W Greenfield Ave Milwaukee 1 Wis (1 thru 10)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (2-3-4-5-6-7-8-9-10)
 American Electric Switch Div Clark Controller Co 1146 E 152 St Cleveland 10 Ohio (1)
 American Klockner-Moeller Corp Box 5007 Tulsa 12 Okla (3-4-5-6-8)
 American Rectifier Corp 95 Lafayette St NY 13 NY (7)
 Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 2 Conn (1 thru 6-9-10)
 Automatic Control Co 995 University Ave St Paul 4 Minn (8)
 Automatic Electric Sales Corp Northlake Ill (8)
 Automatic Switch Co 50-56 Hanover Rd Florham Park NJ (3)
 Automatic Timing & Controls Inc King of Prussia Pa (8)
 B/W Controller Corp 2200 E Maple Rd Birmingham Mich (3-4)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (7)
 Boston Gear Works 14 Hayward St Quincy 71 Mass (7)
 Bryant Electric Co 1421 State St (Box D Barnum St) Bridgeport 2 Conn (5)
 ●CLARK CONTROLLER CO 1146 E 152 St Cleveland 10 Ohio (1 thru 10)—ADV PG 107
 Continental Electric Equipment Co Box 1055 Cincinnati 1 Ohio (8)
 ●CROUSE-HINDS CO Syracuse 1 NY (3-4-5-6)—ADV PG 4th cover
 Curlee (W F) Mfg Co P O Box 776 Houston 1 Tex (1-3-4-8-9)
 Curtis Development & Mfg Co 3244 N 33 St Milwaukee 16 Wis (7)
 ●CUTLER-HAMMER INC 228 N 12th St Milwaukee 1 Wis (1 thru 10)—ADV PG 104-105
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (1)
 Delta Switchboard Co 605 W Fremont St (P O Box 1995) Stockton Calif (3-4-5-8)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (4-7-8)
 Electric Regulator Corp Norwalk Conn (7)
 Electro-Solid Controls Inc 8001 Bloomington Freeway Minneapolis 20 Minn (7)
 Eliza Metal Products Co Box 408 Bridgeville Pa (6)
 Empire Switchboard Co Inc 810 Fourth Ave Brooklyn 32 NY (8)
 Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (2-3-5-6-7-10)
 Federal Pacific Electric Co 50 Paris St Newark 5 NJ (2-3-4-5-6)
 Fidelity Instrument Corp 1000 E Boundary Ave York Pa (7)
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore (6-8-10)
 Furness Electric Co 1067 McKee St Batavia Ill (2-3-4-5-6-9-10)
 Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (4-6-7)
 General Control Co 1200 Soldiers Field Rd Boston 34 Mass (6)
 General Controls Co 801 Allen Ave Glendale Calif (3-4)
 General Electric Co Distribution Assemblies Dept 41 Woodford Ave Plainville Conn (1 thru 8)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 10)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn—ADV PG 84-85
 General Services Co P O Box 612 Corvallis Ore (7)
 General Switch Co 45 Roebling St Brooklyn 11 NY (1)

● **GRAYBAR ELECTRIC CO INC** 420 Lexington Ave NY 17 NY (1 thru 7)—ADV PG 2

Grayhill Inc 551 Hillgrove Ave La Grange Ill (6)

I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa (1)

I-T-E Circuit Breaker Co Bulldog Electric Products Div 7610 Jos Campau Detroit Mich (1)

I-T-E Circuit Breaker Co Greensburg Div P O Box 98 Greensburg Pa (1)

Ideal Electric and Mfg Co East First St Mansfield Ohio (4-5-8)

Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1-3-4-5-6)

Kirkwood Commutator Corp 4855 W 130 St Cleveland 35 Ohio (5)

Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (1)

Leonard Electric Mfg Co 3907 Perkins Ave Cleveland 14 Ohio (8)

Lexington Electric Products Co Inc 12 Chapel St Newark 5 NJ (1-2-3-4-8)

Lindell Electric Control Corp 384 Canal St New York 13 NY (2)

Link-Belt Co 1700 Prudential Plaza Chicago 1 (1) (7)

Lumenite Electronic Corp 407 S Dearborn St Chicago 5 Ill (3)

Machinery Electrification Inc 56 Hudson St Northboro Mass (7)

Mechanical Products Inc 1824 River St Jackson Mich (4)

Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 5 NY (1)

Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (6)

Monitor Controller Div Atlee Corp 99 Grove St Rockland Mass (3-4-5-6-8)

Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16 NY (1)

National Acme Co Electrical Controls Div 170 E 131 St Cleveland 8 Ohio (6-10)

Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (3-4-6-8-9)

Ohmite Mfg Co 3601 Howard St Skokie Ill (7)

Opad Electric Co 43 Walker St New York 13 NY (7)

Parker Electrical Mfg Co 221 Washington St Oakland 7 Calif (1)

Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (1-4-6-9)

Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky (10)

R-B-M Controls Div Essex Wire Corp 131 Godfrey St Logansport Ind (3-4)

Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (6-10)

Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (7)

Richards-Wilcox Mfg Co 150 Third St Aurora Ill (6)

Russell & Stoll Co Inc 125 Barclay St New York 7 NY (1-4-5-6-9-10)

Serenspeed Div Electric Devices Inc 4 Godwin Ave Paterson NJ (7)

Siegler Corp Magnetic Amplifiers Div 632 Tinton Ave New York 55 NY (7)

Square D Co Executive Plaza Park Ridge Ill (1 thru 10)

Square D Co Electric Controller & Mfg Div 4493 Lee Rd Cleveland 28 Ohio (1-3-4)

Struthers-Dunn Inc Pitman NJ (4)

Superior Electric Co 383 Middle St Bristol Conn (7)

System Analyzer Corp 700 W State St Nokomis Ill (3)

U S Electrical Motors Inc 200 E Slauson Ave Los Angeles 54 Calif (7)

Versa Tool Mfg Co Inc Lake Ave at Fourth St Racine Wis (7)

Vickers Inc Tulsa Products Div 731 E First St Tulsa 20 Okla (7)

Wac Line Inc 35 S St Clair St Dayton 2 Ohio (7)

Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky (1)

Ward Leonard Electric Co 28 South St Mount Vernon NY (3-4-6)

Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (7)

Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 10)

● **WESTINGHOUSE ELECTRIC SUPPLY CO** 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1 thru 8)—ADV PG 2nd cover

Winterburn Mfg Co P O Box 386 Putnam Conn (7)

● **ZENITH ELECTRIC CO** 155 W Walton St Chicago 10 Ill (3-4)—ADV PG 116

Zinsco Electrical Products 729 Turner Los Angeles 12 Calif (8)

3N. RELAYS

1. General purpose
2. Protective
3. Timing & time delay
4. Rotary
5. Motor-starting
6. Electronic
7. Miniature

General purpose relays include magnetic and mechanically held types for remote switching of electrical circuits. Protective relays include overload, thermal, undervoltage, phase rotation, etc., relays.

Abrams Instrument Corp 606 E Shawnee St Lansing Mich (3)

Acro Switch Div Robertshaw-Fulton Controls Co 2040 E Main St Columbus 16 Ohio (1)

Adams & Westlake Co 1025 N Michigan St Elkhart Ind (1-3)

Aemo Inc 10 State St Mankato Minn (1)

Airserco Mfg Co Inc 3875 Bigelow Blvd Pittsburgh 13 Pa (1)

Aitken-Reed Inc 2802 Wolmer St Manitowac Wis (1-3)

Alcor Mfg Co 1140 S Seventh St De Kalb Ill (1)

Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (1-2-3-6)

Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-2-3-5)

American Klockner-Moeller Corp Box 5007 Tulsa 12 Okla (1-2-5)

Amperite Co Inc 561 Broadway NY 12 NY (3)

Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (1)

Autocall Co 58 Warden Ave Shelby 9 Ohio (1)

Automatic Electric Sales Corp Northlake Ill (1-3-4-6-7)

Automatic Switch Co 50-56 Hanover Rd Florham Park NJ (1-2-3)

Automatic Timing & Controls Inc King of Prussia Pa (3)

B/W Controller Corp 2200 E Maple Rd Birmingham Mich (2-6)

Baker Perkins Inc Saginaw Mich (2)

Bristol Motor Div Vocalline Co of America Inc Coulter St Old Saybrook Conn (3)

Clare (C P) & Co 3101 Pratt Blvd Chicago 45 Ill (1)

Clark Controller Co 1146 E 152 St Cleveland 10 Ohio (1-2-3-5-6)

Comar Electric Co 3349 W Addison Chicago 18 Ill (1)

Cooper Hewitt Electric Co Inc 720-732 Grand St Hoboken NJ (6)

Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ (6-7)

Cramer Div Giannini Controls Corp Old Saybrook Conn (3-6)

Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (1-2-3-5-6)

Daystrom Inc Weston Instruments Div 614 Freyhinghusen Ave Newark 12 NJ (1 thru 7)

Dialight Corp 60 Stewart Ave Brooklyn 37 NY (3-6-7)

Ebert Electronics Corp 212-26 Jamaica Ave Queens Village 28 LI NY (1)

Edwards Co Inc Norwalk Conn (1)

Elastic Stop Nut Corp of America Elizabeth Div 1027 Newark Ave Elizabeth NJ (3)

Electro-Solid Controls Inc 8001 Bloomington Freeway Minneapolis 20 Minn (6)

Elgin National Watch Co Electronics Div 2435 N Miami St Burbank Calif (1-4)

Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (1-3)

Farmer Electric Products Co Inc 2300 Washington St Newton Lower Falls 62 Mass (1-6)

Federal Pacific Electric Co 50 Paris St Newark 5 NJ (2)

General Controls Co 801 Allen Ave Glendale Calif (1)

General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-3-5-6-7)

Guardian Electric Mfg Co 1550 W Carroll Ave Chicago 7 Ill (1)

H-B Instrument Co American & Bristol Sts Philadelphia 40 Pa (1)

Hagen Mfg Co 104 Walnut St Baraboo Wis (3-5)

Haledy Electronics Co 57 William St NY 5 NY (1)

Hanksraft Co Control Div Reedsburg Wis (1)

Hart Mfg Co 164 Bartholomew Ave Hartford Conn (1-7)

Haydon (A W) Co 232 N Elm St Waterbury Conn (3)

Haydon (A W) Co 4060 Ince Blvd Culver City Calif (3)

Haydon Div General Time Corp 245 E Elm St Torrington Conn (3)

Heinemann Electric Co Pennsylvania Ave & Plum St Trenton 2 NJ (2-3)

Ideal Electric and Mfg Co East First St Mansfield Ohio (5)

Iron Firearm Mfg Co Electronics Div 2838 S E 9th Ave Portland 2 Ore (1)

Jordan Electronics 121 S Palm Ave Alhambra Calif (3)

Kurman Electric Co 191-193 Newel St Brooklyn 22 NY (1-2-3)

Leach Corp 18435 Susana Rd Compton Calif (1-2-3-4)

Ledex Inc 123 Webster St Dayton 2 Ohio (4)

Lewus Electric Co 1254 W Harrison St Chicago 7 Ill (5)

Lumenite Electronic Corp 407 S Dearborn St Chicago 5 Ill (3)

Machinery Electrification Inc 56 Hudson St Northboro Mass (7)

Mechanical Products Inc 1824 River St Jackson Mich (5)

Mercoird Corp 4201 W Belmont Ave Chicago 41 Ill (1)

Metals & Controls Inc 34 Forest St Attleboro Mass (2-3-5)

Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (1-3-6)

Naybor (E V) Laboratories Inc 26 Manorhaven Blvd Port Washington NY (1-3-4-7)

Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (3)

Ohmite Mfg Co 3601 Howard St Skokie Ill (1-2)

Patrick & Wilkins Co 51 N Seventh St Phila 6 Pa (1)

Penn Controls Inc Goshen Ind (1)

Phillips Control Co 59 W Washington St Joliet, Ill (1)

Pollak (Joseph) Corp 81-95 Freepoint St Boston 22 Mass (1)

Potter & Brumfield Div American Machine and Foundry Co Princeton Ind (1-5-7)

Price Electric Corp East Church & Second Sts Frederick Md (1)

R-B-M Controls Div Essex Wire Corp 131 Godfrey St Logansport Ind (1-5)

Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (2)

Rhodes (M H) Inc 30 Bartholomew Ave Hartford Conn (3)

Sierra Electric Corp 15100 S Figueroa St (P O Box 85) Gardena Calif (1-4)

Square D Co Executive Plaza Park Ridge Ill (1-2-3-5)

Stradley Engineering Co P O Box 6006 Pittsburgh 11 Pa (2)

Struthers-Dunn Inc Pitman NJ (1-3)

Sylvania Electric Products Inc 730 Third Ave New York 19 NY (3)

Taitco Div Tait Mfg Co 500 Webster St Dayton 1 Ohio (1)

Telex/Aemco 10 State St Mankato Minn (1-2-3-5-7)

Terado Corp 1068 Raymond Ave St Paul 8 Minn (7)

Thermal Engineering & Design Co 217 Ash St Akron 8 Ohio (2)

Touch-Plate Mfg Corp Box 1970 Long Beach Calif (1)

Ulanet (George) Co 413-15 Market St Newark 5 NJ (3)

Ward Leonard Electric Co 28 South St Mount Vernon NY (1)

Wester Electric Co 1900 Clark St Racine Wis (3)

Wesix Electric Heater Co 390 First St San Francisco 5 Calif (1)

Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3-5-6-7)

Westinghouse Electric Corp Standard Control Div Beaver Pa (1-2-3)

● **WESTINGHOUSE ELECTRIC SUPPLY CO** 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-3)—ADV PG 2nd cover

Wheelock Signals Inc Branchport Ave Long Branch NJ (1)

White-Rodgers Co 9797 Reavis Rd St Louis 23 Mo (1)

Wilson (G C) & Co 1035 26th St Huntington W Va (3)

Zenith Electric Co 155 W Walton St Chicago 10 Ill (3)

3P. SYSTEM REGULATING EQUIPMENT

1. Capacitors
2. Rheostats
3. Voltage regulators
4. Load resistors
5. Variators
6. Thermistors
7. Arc suppressors

Capacitors are for power factor control; resistances & rheostats are for control of voltage & current in circuits to motors, elevators, plating equipment, etc.; voltage regulators control voltage of transmission lines, feeders or specific utilization equipment. Variators are voltage-sensitive resistors; thermistors are thermally sensitive resistors.

Acme Electric Corp 45 Water St Cuba NY (3)

Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (2-3)

Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-3)

American Rectifier Corp 95 Lafayette St New York 13 NY (3)

Biddle (James G) Co 1316 Arch St Phila 7 Pa (1)

Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (3)

Bradley Semiconductor Corp 275 Walton St New Haven 11 Conn (7)

Central Transformer Co 900 W Jackson Blvd Chicago 7 Ill (3)

Clark Controller Co 1146 E 152 St Cleveland 10 Ohio (2-4)

Columbia Electric Mfg Co 4519 Hamilton Ave Cleveland 14 Ohio (2)

Continental-Wirt Electronics Corp 26 W Queen Lane Philadelphia 44 Pa (2)

Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ (1)
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill (3)
 Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (3)
 Electronic Measurements Co Inc Lewis St & Maple Ave Eatontown NJ (3)
 Exmet Corp 127 Marbledale Rd (P O Box 485) Tuckahoe NY (4)
 Euclid Electric & Mfg Co 50 Edwards St Madison Ohio (4)
 Federal Pacific Electric Co 50 Paris St Newark 5 NJ (1)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 7)
 General Services Co P O Box 612 Corvallis Ore (2)
 Girard-Hopkins 1000 40th Ave Oakland 1 Calif (1)
 Global Plant (Electronics Div) Carborundum Co Niagara Falls NY (4-5-6-7)
 Guyan Machinery Co Inc Box 150 Logan W Va (2-4)
 Hardwick Hindle Inc 40 Hermon St Newark 5 NJ (2-4)
 Keystone Carbon Co Inc 1935 State St St Marys Pa (6)
 Lake Shore Electric Corp 205 Willis St Bedford Ohio (3)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-3)
 Mallory (P R) & Co Inc 30 S Gray St Indianapolis 6 Ind (2)
 National Electric Contoller Co 7070 Glenwood Ave Chicago 26 Ill (2)
 Ohio Brass Co 380 N Main St Mansfield Ohio (1)
 Ohmite Mfg Co 3601 Howard St Skokie Ill (2-4)
 Pennsylvania Transformer Div McGraw-Edison Co Box 330 Canonsburg Pa (3)
 Railroad Accessories Corp Tenakill Park Cresskill NJ (2-4)
 Raytheon Co Industrial Operation Keeler Ave South Norwalk Conn (3)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (3)
 Sangamo Electric Co 11th & Converse Springfield Ill (1)
 Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio (5)
 Shallcross Mfg Co Preston St Selma NC (4)
 Simplex Co Inc 1139-41 N MacArthur Blvd Springfield Ill (3)
 Sola Electric Co 1717 Busse Rd Elk Grove Village Ill (3)
 Sorensen & Co Richards Ave South Norwalk Conn (3)
 Sprague Electric Co North Adams Mass (1)
 Superior Electric Co 383 Middle St Bristol Conn (2-3)
 Tobe Deutschmann Corp Providence Highway Norwood Mass (1)
 Versa Tool Mfg Co Inc Lake Ave at Fourth St Racine Wis (2)
 Ward Leonard Electric Co 28 South St Mount Vernon NY (2-4)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (3)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3-6-7)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-3)—ADV PG 2nd cover
 Yellow Springs Instrument Co Inc P O Box 106 Yellow Springs Ohio (6)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
3-1	Electronic Switch Controls; 32p; Cat. No. Z-12 (Arrow-Hart)
3-2	Motor Controls & Enclosed Switches; 102p; Cat. No. 15 (Arrow-Hart)
3-3	Solenoids; 12p; Cat. No. 5785 (Automatic Switch)
3-4	Electric Plant Controls; 10p; Cat. No. 57-56 (Automatic Switch)
3-5	Relays; 42p; Cat. No. 57-S4 (Automatic Switch)
3-6	Accessories and Special Control Equipment; 10p; Cat. No. 57-S7 (Automatic Switch)
3-7	Contactors; 28p; Cat. No. 57-S3 (Automatic Switch)
3-8	Automatic Transfer Switches; 56p; Cat. No. 57-S1 (Automatic Switch)
3-9	Remote Control Switches; 78p; Cat. No. 57-S2 (Automatic Switch)
3-10	Automatic Transfer Switches; 22p; Cat. No. 596-R2 (Automatic-Switch)
3-11	Solenoids Valves; 70p; Cat. No. 203 (Automatic-Switch)
3-12	Photoelectric Controls; 24p; Cat. No. 60 (Autotron)
3-13	Rheostats; 12p; Cat. No. 41 (Biddle)
3-14	Relays; 18p (Adams & Westlake)
3-15	Load Centers; 12p; Cat. No. C-200 (Bryant)
3-16	Switchgear Control Panels; 16p (Central Electric)
3-17	Industrial Limit Switches; 12p; Cat. No. 201 (Denison)
3-18	Mercury Relays; 8p; Cat. No. 160 (Ebert)
3-19	Rotary Multipole Switches; 18p; Cat. No. 101-A (Electro-Switch)
3-20	Power Distribution Equipment Redi-Reference; 100p (Federal Pacific)
3-21	Fusible Service Equipment; 20p; Cat. No. FB-1-1110 (Federal Pacific)
3-22	AC Crane Control; 6p (Fidelity)
3-23	Automatic Heating Controls; 96p; Cat. No. 1961 (General Controls)
3-24	Industrial Solenoid Valves; 10p (General Controls)
3-25	General Purpose Controls; 92p; Cat. No. GEC-1260 (GE Co.)
3-26	Power Capacitors; 16p; Cat. No. GEA-7198 (GE Co.)
3-27	Motor Control Centers; 12p; Cat. No. GEA-7238 (GE Co.)
3-28	Low-Voltage Switchgear; 12p; Cat. No. GED-4269 (GE Co.)
3-29	Industrial Voltage Regulators; 28p; GEC-1450 (GE Co.)
3-30	Products for Automation; 40p (Hagen)
3-31	Electrical Laboratory & Test Equipment; 16p; Cat. No. 104 (Hamden)
3-32	Stage & Lighting Control Switchboards; 20p; Cat. No. SB-51 (Hub)
3-33	Panelboards, Switchboards, and Unit Substations; 52p; Cat. No. 108 (Kinney)
3-34	Lighting Control Systems; 40p; Cat. No. S-65 (Kliegl)
3-35	Diesel Generator Control Cabinets; 10p; Cat. No. G-362 (Lake Shore)
3-36	Rotary Selector Switches; 12p; Cat. No. B-559 (Ledex)
3-37	Rotary Solenoid & Rectifier Data; 32p; Cat. No. C-961 (Ledex)
3-38	Automatic Controls; 60p; Cat. No. 862 (Mercoind)
3-39	Induction Disc Relay Testers; 48p; Cat. No. SB-RT-1 (Multi-Amp)
3-40	Limit Switches; 28p; Cat. No. EM 1224B (National Acme)
3-41	Control Switches; 24p; Cat. No. CP-NP (National Acme)
3-42	Solenoids; 24p; Cat. No. EC-H161 (National Acme)
3-43	Photorelay Handbook; 32p (Photobell)
3-44	Photoelectric Controls; 22p Cat. No. 611 (Photomation)
3-45	Street Lighting Controls; 40p (Ripley)
3-46	Day to Nite Electronic Switching Controls; 8p (Solar-Sonic)
3-47	Relays and Timer Products; 60p (Telex/Aemco)
3-48	Time Controls; 8p; Cat. No. 71A (Tork)
3-49	Dimmers for Lighting Control; 80p (Ward Leonard)

SECTION 4. PROTECTIVE DEVICES

4A. FUSE CUTOUTS & LINKS

For high-voltage distribution lines.

Chance (A B) Co 210 North Allen St Centralia Mo
 Dossert Mfg Corp 249-255 Huron St Brooklyn 22 NY
 G & W Electric Specialty Co 3500 W 127 St Blue Island Ill
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
 Hubbard & Co 6301 Butler St Pittsburgh 1 Pa
 Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill
 Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis
 Powderdyne Inc 17150 Boones Ferry Rd Oswego Ore
 S & C Electric Co 6601 Ridge Blvd Chicago 26 Ill
 USCO Power Equipment Corp 829 N 36th Way Birmingham 4 Ala
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
 Westinghouse Electric Supply Co 3 Gateway Center (Box 448) Pittsburgh 30 Pa

4B. FUSES

1. Cartridge
2. Current-limiting
3. Glass tube
4. Open link
5. Plug
6. Time-delay

Cartridge, plug and open-link fuses are for feeder and branch circuit distribution overload protection; glass tube fuses protect individual devices or instruments; current-limiting fuses limit system short-circuit currents to safe values.

A K Electric Corp 231 Front St Brooklyn 1 NY (1-5)
 Bussmann Mfg Div McGraw-Edison Co University at Jefferson St Louis 7 Mo (1-2-3-4-5)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (1-5)
 Chase-Shawmut Co 374 Merrimac St Newburyport Mass (1-2-5)
 Commercial Enclosed Fuse Co of NJ 6812 Polk St Guttenberg NJ (1-3-5)
 Dependable-Electric Mfg Co Inc 537 Johnson Ave Brooklyn 37 NY (5)

Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-3-5)
 Economy Fuse Div Federal Pacific Electric Co 2070 Maple St Des Plaines Ill (1-2-5-6)
 Excel Fuse Co 117 W Erie St Pittsburgh 12 Pa (1)
 Federal Pacific Electric Co 50 Paris St Newark 5 NY (1-5)
 Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (2-5)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-4)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (5)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 6)—ADV PG 84-85
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-3-4-5)—ADV PG 2
 Interlectric Div El-Tronics Inc 1401 Lexington Ave Warren Pa (1)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-4)
 Littlefuse Inc 1865 Miner St Des Plaines Ill (3)
 Miller Electric Co 120 Main St Pawtucket RI (1-5)
 Monarch Electric Div El-Tronics Inc 118 E First St Jamestown NY (1-2-5-6)
 Pierce Products Inc Box F Leicester NY (1-5)
 Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (1)

Royal Electric Corp 95 Grand Ave Pawtucket RI (1-5)
S & C Electric Co 6601 Ridge Blvd Chicago 26 III (2)
Sightmaster Corp 50 Aleppo St Providence RI (3-6)
Solar Electric Corp 121 Central Ave Warren Pa (1)
Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (1-5)
Trico Fuse Mfg Co 2948 N 5th St Milwaukee 12 Wis (1)
Ware Fuse Corp 4400 W Lake St Chicago 24 III (1-5)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-4-6)
Westinghouse Electric Supply Co 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2)
Westron Corp 652 Hudson St NY 14 NY (1)

4C. FUSE ACCESSORIES

1. Dummy plugs
2. Fuse clips
3. Fuse clip clamps
4. Fuse clip reducers
5. Fuse cutouts, blocks & holders
6. Fuse links
7. Fuse wire strip
8. Fuse adapter remover
9. Fuse clip cleaner
10. Fuseholder cover plates

Supplementary equipment for low-voltage distribution fuses.

Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (5)
Atlee Corp Atlas Div 2 Lowell Ave Winchester Mass (2)
Bell Electric Co 5735 S Claremont Ave Chicago 36 III (10)
Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (5)
Bussmann Mfg Div McGraw-Edison Co University at Jefferson St Louis 7 Mo (1 thru 7)
Cable Electric Products Inc 234 Daboll St Providence 7 RI (5)
Chase-Shawmut Co 374 Merrimac St Newburyport Mass (2-5-6-7)
Circle F Mfg Co 720 Monmouth St Trenton 4 NJ (5)
Commercial Enclosed Fuse Co of NJ 6812 Polk St Guttenberg NJ (2-3-4-6-7)
Connecticut Electric Mfg Co Main St Bantam Conn (5)
Dante Electric Mfg Co Bantam Conn (2)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (3-4-6)
Economy Fuse Div Federal Pacific Electric Co 2070 Maple St Des Plaines III (2-3-4-6)
Excel Fuse Co 117 W Erie St Pittsburgh 12 Pa (2-6)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (5-6)
General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (5)
Hoffman Engineering Corp 1050 Tyler St Anoka Minn (5)
Holub Industries Inc 442 Elm St Sycamore III (3-4)
Ilco Corp 4730 Madison Rd Cincinnati 27 Ohio (2)
Interlectric Div El-Tronics Inc 1401 Lexington Ave Warren Pa (3-6)
Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (5)
Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (2-4-5)
Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (2)
Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (3-9)
Monarch Electric Div El-Tronics Inc 118 E First St Jamestown NY (2-6)
Multi Electric Mfg Inc 4223 W Lake St Chicago 24 III (2-5)
Pierce Products Inc Box F Leicester NY (6)
Royal Electric Corp 95 Grand Ave Pawtucket RI (4)
Specialties Inc 2936 Sacramento St Pittsburgh 4 Pa (2)
Square D Co Executive Plaza Park Ridge III (2)
Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (6)
Sylvania Electric Products Inc 730 Third Ave New York 19 NY (2)
Trico Fuse Mfg Co 2948 N 5th St Milwaukee 12 Wis (3-4)
Ware Fuse Corp 4400 W Lake St Chicago 24 III (6)

4D. CIRCUIT BREAKERS

1. High voltage
2. 600v and less
3. Explosion-proof
4. Vapor-proof

For primary and secondary distribution feeder and branch circuit protection.

Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (2)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-2)
Appleton Electric Co 1701-59 Wellington Ave Chicago 13 III (2)
Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (2)
●CROUSE-HINDS CO Syracuse 1 NY (2)—ADV PG 4th cover
Curlee (W F) Mfg Co P O Box 776 Houston 1 Tex (2-3-4)
Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (2)
Derrick Light Inc P O Box 9335 Houston Texas (2-4)
Federal Pacific Electric Co 50 Paris St Newark 5 NJ (1-2)
Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (3)
●GENERAL ELECTRIC CO INDUSTRIAL SALES OPERATION 1 River Road Schenectady 5 NY (1-2-3-4)—ADV PG 83
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3-4)—ADV PG 84-85
Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (1-2)
Heinemann Electric Co Pennsylvania Ave & Plum St Trenton 2 NJ (2)
Hope Electrical Products Co Inc 27 Long Ave Hillside NJ (2)
I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa (4)
I-T-E Circuit Breaker Co Bulldog Electric Products Div 7610 Jos Campau Detroit Mich (2)
Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (3-4)
Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (2)
Lake Shore Electric Corp 205 Willis St Bedford Ohio (2)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1)
Mechanical Products Inc 1824 River St Jackson Mich (2)
Metals & Controls Inc 34 Forest St Attleboro Mass (2-3)
Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16 NY (2)
Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (1-2-3)
Pyle-National Co 1344 N Kostner Ave Chicago 51 III (2-3)
Russell & Stoll Co Inc 125 Barclay St New York 7 NY (2-3-4)
Sangamo Electric Co 11th & Converse Springfield III (2)
Squares D Co Executive Plaza Park Ridge III (1-2-3)
Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky (2)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3)
Westinghouse Electric Corp Standard Control Div Beaver Pa (2)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (2-3-4)—ADV PG 2ND COVER
Zinsco Electrical Products 729 Turner Los Angeles 12 Calif (2)

4E. SPECIAL PROTECTIVE EQUIPMENT

1. Cathodic protective equipment
2. Current-limiting reactors
3. Lightning protective equipment
4. Motor thermal overload devices
5. Network protectors
6. Ground rods
7. Ballast thermal protectors
8. Motor single-phasing protection
9. Capacitor protective gaps
10. Fluorescent lamp circuit-breaker protectors
11. Surge protectors

Aetna Protection Co 474 Chestnut St Meadville Pa (3)
Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (4-11)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (2-4)
Blackburn (Jasper) Corp 1525 Woodson Rd St Louis 14 Mo (6)
Boggs (Harold L) & Co 34 N Gore Ave St Louis 19 Mo (6)
Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (2)
Boylan Lighting Protection Co Steubenville Ohio (3)
Brach Mfg Corp 200 Central Ave Newark 3 NJ (3)
Capital Lightning Protection Co Inc Box 102 Raleigh NC (3)
Cathodic Protection Service 4601 Stanford St Houston Tex (1)
Copperweld Steel Co Wire and Cable Div Glassport Pa (3-6)
Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (4)
Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 III (3)
Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 III (1-2)
Dossert Mfg Corp 249-255 Huron St Brooklyn 22 NY

Engelhard Industries Inc Industrial Equipment Div Instruments & Systems Sec 850 Passaic Ave East Newark NJ (1)
General Cable Corp 730 Third Ave New York 17 NY (1-3)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 5-7-9-10-11)
Goetz (J F) Mfg Co 162 South St Hartford Wis (3)
Good-All Electric Mfg Co 112 W First St Ogallala Neb (1)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (3-6)
Independent Protection Co Inc 1605-07 S Main St Goshen Ind (3)
Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 III (3)
Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo (3)
Knopp Inc 1307 66th St Oakland 8 Calif (1)
Kortick Mfg Co 5600 Third St San Francisco 24 Calif (6)
Lightning Rod Supply Co Shelton Conn (3)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (3)
M & W Electric Mfg Co Inc 5 Walnut St (P O Box 350) East Palestine Ohio (6)
Metals & Controls Inc 34 Forest St Attleboro Mass (4-7)
Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16 NY (2)
Neison Electric Mfg Co P O Box 5385 Tulsa Okla (1)
Ohio Brass Co 380 N Main St Mansfield Ohio (3)
Penn-Union Electric Corp 315 State St Erie Pa (6)
Porcelain Products Co 224 N Patterson St Carey Ohio (6)
Premax Products Div Chisholm-Ryder Co Inc College & Highland Aves Niagara Falls NY (6)
R T & E Corp 1900 E North St Waukesha Wis (3)
Railroad Accessories Corp Tenakill Park Cresskill NJ (3)
Richardson-Allen Corp 116-15 Fifteenth Ave College Point LI NY (1-2)
Rome Cable Div of Alcoa 421 Ridge St Rome NY (1)
Security Mfg & Contracting Co 606-612 Pine St Burlington Wis (3)
Stackpole Carbon Co Stackpole St St Marys Pa (6)
Stradley Engineering Co P O Box 6006 Pittsburgh 11 Pa (8)
Swedish Iron & Steel Corp 910 Westfield Ave Elizabeth NJ (10)
Thermal Engineering & Design Co 217 Ash St Akron 8 Ohio (4-7)
Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo (11)
Wallace & Tiernan Inc 25 Main St Belleville NJ (1)
Warren Lightning Rod Co 475 Dayton Ave Collingswood 7 NJ (3)
Weaver (J A) Co 2110 Howard St St Louis 6 Mo (6)
West Dodd Lightning Conductor Corp Goshen Ind (3)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 5-8-9-11)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (2-3-5-6)—ADV PG 2ND COVER

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
4-1	Fuse Plugs & Cord Sets; 50p; Cat. No. 57 (A. K. Electric)
4-2	Lighting Protection and Static Grounding Equipment; 12p (Aetna)
4-3	Econolm High Interrupting Capacity Fuses; 8p (Economy)
4-4	Current-Limiting Fuses; 8p; Cat. No. GEA-6319 (GE Co.)
4-5	Energy Limiting Fuses; 28p; Cat. No. USFG61M (Monarch Electric)
4-6	Lightning Protection in the Modern Manner; 12p (Security)
4-7	Fuses; 10p; Cat. No. 61 (Sightmaster)
4-8	Lightning Protection Devices; 20p; Cat. No. 5 (West Dodd)

SECTION 5. WIRING DEVICES AND BOXES

See index for panelboards and other equipment normally housed in cabinets.

Switches other than wiring device switches are listed in Sec. 3.

Hangers and supports for cable and conduit are listed in Sec. 6 & 7, respectively.

Lamp dimmers are listed in Sec. 3.

5A. WIRING DEVICE SWITCHES

1. Canopy
2. Ceiling pull
3. Cord
4. Delayed action
5. Door-operated
6. Key-operated
7. Lever-operated pull
8. Lumiline cap
9. Mercury
10. Momentary contact
11. Oil burner
12. Pendant
13. Pushbutton
14. Rotary
15. Tumbler
16. Weatherproof
17. Toggle
18. Tap
19. Rocker type
20. Silent type

Small switches used for general control of lighting and appliance loads in residences, offices, etc.

- Akor Mfg Co 1140 S Seventh St De Kalb III (1-5-10-14)
- Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY (10)
- Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (1-2-3-6-10-12 thru 18-20)
- Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (2-3-5-6-8-9-10-13 thru 20)
- Cable Electric Products Inc 234 Daboll St Providence 7 RI (13-12-14-15-17)
- CIRCLE F MFG CO 720 Monmouth St Trenton 4 NJ (1-2-3-5-8-10 thru 20)—ADV PG 87
- Controls Co of America Control Switch Div 1420 Delmar Dr Folcroft Pa (13-17)
- Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (1-5-6-10 thru 14-16-17-19)
- Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-2-3-5-9-11 thru 19)
- Edco International Corp 20722 W Seven Mile Rd Detroit 19 Mich (4)
- Edwards Co Inc Norwalk Conn (10-12-13-17)
- Furnas Electric Co 1067 McKee St Batavia III (13)
- Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (16)
- General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (4-6-7-13-14-15-17-18)
- General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1-3-5-6-8-9-11-13-14-15-16)
- GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport 2 Conn (1 thru 20)—ADV PG 84-85
- H-B Instrument Co American & Bristol Sts Philadelphia 40 Pa (9)
- Hart Mfg Co 164 Bartholomew Ave Hartford Conn (14-15)
- HUBBELL (HARVEY) INC State St & Bostwick Ave Bridgeport 2 Conn (2-3-5-6-8-9-11 thru 16)—ADV PG 42
- Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (7-10-13-15-16)
- Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (1-3-10)

- LEVITON MFG CO INC 236 Greenpoint Ave Brooklyn 22 NY (1-2-3-6-8 thru 20)—ADV PG 89
- Massey (A H) Inc 111 3rd St (P O Box 206) Derby Conn (15)
- McGill Mfg Co Inc Valparaiso Ind (1-7-10-13-17-19)
- MICRO SWITCH Div of Minneapolis-Honeywell Regulator Co Chicago & Spring Freeport III (12)
- Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (11-13)
- National Tool & Mfg Co 100 N 12 St Kenilworth NJ (1-2-5-11-16-17-20)
- Pass & Seymour Inc Syracuse 9 NY (2-3-5-6-9-10-12-13-15-16-19)
- Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (13-14-15-16)
- RODALE MFG CO INC 6th & Minor Sts Emmaus Pa (9-12-13-15 thru 20)—ADV PG 78
- Royal Electric Corp 95 Grand Ave Pawtucket RI (1-16)
- Russell & Stoll Co Inc 125 Barclay St New York 7 NY (13-15-16)
- SIERRA ELECTRIC CORP 15100 S Figueroa Gardena Calif (6-9-10-13-15-17-19-20)—ADV PG 115
- Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (2-5-6-9-10-11-13-15-16-17-19-20)
- Suttle Equipment Corp 135 S LaSalle St Chicago 3 Ill (13)
- Theiler (H J) Corp Ashmont Ave Whitinsville Mass (15)
- Touch-Plate Mfg Corp Box 1970 Long Beach Calif (10)
- Tower Mfg Corp 158 Pine St Providence 3 RI (5)
- Triboro Electric Corp 110 Waterberry Brooklyn 6 NY (1)
- Trine Mfg Corp 1430 Ferris Place New York 61 NY (5)
- Van Brunt Electric & Mfg Co Inc 252-254 Van Brunt St Brooklyn 31 NY (16)
- Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky (5-16)
- Winterburn Mfg Co P O Box 386 Putnam Conn (5)

5B. CORD CONNECTION DEVICES

1. Caps, plugs, bases & taps, household type
2. Convenience outlets
3. Multi-outlet assemblies
4. Power cord-connection bodies, heavy duty
5. Range & dryer receptacles
6. Weatherproof outlets
7. Grounding adapters
8. TV antenna outlets
9. Combination TV-ac outlets
10. Fused plugs & taps
11. Explosion-proof plugs & receptacles
12. Locking-type plugs & receptacles

Devices for extension of electrical circuits to equipment by means of portable cords.

- A K Electric Corp 231 Front St Brooklyn 1 NY (1-3-4-10)
- Adam (Frank) Electric Co 3647 Windsor Pl St Louis 10 Mo (2)
- Aitken-Reed Inc 2802 Wollmer St Mantolowac Wis (3)
- Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (6)
- Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (1 thru 7)
- Beckley Electric Co Inc 468-470 Grand Ave Brooklyn 38 NY (1-4)
- BELL ELECTRIC CO 5735 S Claremont Ave Chicago 36 Ill (2-4-5-6)—ADV PG 75
- Black (M) Mfg Co 300-08 N Third St Phila 6 Pa (1)
- Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (1 thru 7-12)
- CBC Electronics Co Inc 2601 N Howard St Philadelphia 33 Pa (5)
- Cable Electric Products Inc 234 Daboll St Providence 7 RI (1-2-3)
- Cam-Lok Div Empire Products Inc 9213 Blue Ash Rd Cincinnati 42 Ohio (4-6-11-12)
- Cannon Electric Co 3208 Humboldt St Los Angeles 31 Calif (4)
- CIRCLE F MFG CO 720 Monmouth St Trenton 4 NJ (1 thru 7)—ADV PG 87
- CROUSE-HINDS CO Syracuse 1 NY (1-2-3-4-6)—ADV PG 4th COVER
- Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (4)
- Derrick Light Inc P O Box 9335 Houston Texas (6)
- Duro-Test Corp 2321 Hudson Blvd North Bergen NJ (1)
- Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-2-4-5-6-7-10-12)

- Electric Cords & Supply Corp 413 E 3rd St Los Angeles 13 Calif (1)
- Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (1-3-4)
- Frankel Engineering Laboratories Inc 207 S 5th St Reading Pa (4)
- FULLMAN MFG CO 1209-1215 Jefferson St Latrobe Pa (2)—ADV PG 112
- Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (1-2-3-4-5-6)
- General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1 thru 7-12)
- General Industries Inc 34529 Ford Rd Garden City Mich (1)
- Glade Mfg Co 1632 W 75 Pl Chicago 20 Ill (1)
- GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1 thru 6)—ADV PG 2
- Hessel (W F) Co Inc 74 Beekman St NY 38 NY (3-4-6-10)
- Hoffman Engineering Corp 1050 Tyler St Anoka Minn (3-6)
- Hopax Electric Inc 547 Greenwich St NY 13 NY (1)
- HUBBELL (HARVEY) INC State St & Bostwick Ave Bridgeport 2 Conn (1 thru 6-11)—ADV PG 42
- I-T-E Circuit Breaker Co Bulldog Electric Products Div 7610 Jos Campau Detroit Mich (3)
- Industrial Automation Corp 2415 W Montrose Ave Chicago 11 (6)
- Jordan Industries Inc 3030 N W 75 St Miami 47 Fla (1)
- Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio (3-4-6-12)
- Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (6)
- Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (1-2-4-5-6)
- Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (1-2)
- LEVITON MFG CO INC 236 Greenpoint Ave Brooklyn 22 NY (1 thru 7-12)—ADV PG 89
- Massey (A H) Inc 111 3rd St (P O Box 206) Derby Conn (1-2-3-4)
- McKinley (Ben P) Co 522 S Clinton St Chicago 7 Ill (2-4-5)
- Midwest Electric Products Inc 1515 N Front St Mankato Minn (1-3-4-5-6-8)
- Murray (D A) Co Inc 632 N Mill St Tipton Ind (1)
- National Tool & Mfg Co 100 N 12 St Kenilworth NJ (1-2-3-5-6)
- PLM Products Inc 3871 W 150 St Cleveland 11 Ohio (4)
- Pacific Electriccord Co 747 W Redondo Beach Blvd Gardena Calif (1-2-3-4-12)
- Pass & Seymour Inc Syracuse 9 NY (1-2-4-5-6-7-8-12)
- Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (6-12)
- Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville LI NY (6)
- Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (3-4-6)
- Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (6)
- Ralco Mfg Co 123-141 N Albany Ave Chicago 12 Ill (4-5-11-12-13)
- RODALE MFG CO INC 6th & Minor Sts Emmaus Pa (1 thru 7-12)—ADV PG 78
- Royal Electric Corp 95 Grand Ave Pawtucket RI (1 thru 7)
- Russell & Stoll Co Inc 125 Barclay St New York 7 NY (4-6-11-12)
- SIERRA ELECTRIC CORP 15100 S Figueroa Gardena Calif (2-3-5-6-8-9)—ADV PG 115
- Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (2-4-5-6)
- Sta-Tite Mfg Co 2000 Wyandotte Kansas City 8 Mo (1)
- Standard Electric Time Co 89 Logan St Springfield 2 Mass (3)
- Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (1-2-4-5-6)
- Stemco Mfg Co Box 9024 Stockyards Sta Denver 16 Colo (8)
- Stanco Electric Products Co 333 Monroe Ave Kenilworth NJ (2-3-4-6)
- Superior Electric Co 383 Middle St Bristol Conn (4)
- Tele-Jac Co 840 N Cummings Rd Covina Calif (8-9)
- Tigerman Engineering Co 4332 N Western Ave Chicago 18 Ill (6)
- Triboro Electric Corp 110 Waterberry Brooklyn 6 NY (1-2-3-6-12)
- Urell Inc Bradford Pa (1)
- Van Brunt Electric & Mfg Co Inc 252-254 Van Brunt St Brooklyn 31 NY (6)
- Water Saver Faucet Co 611 W Adams St Chicago 6 Ill (4)
- Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (3-4-5)
- Wilkoft (M J) Co 823 Locust Pittsburgh 19 Pa (1)
- WIREMOLD CO Hartford 10 Conn (3)—ADV PG 4
- Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (1-3-4-10-12)

SC. LAMP ACCESSORIES

1. Ballasts
2. Bayonet sockets
3. Bipost sockets
4. DC fluorescent resistors
5. Fluorescent lamp capacitors
6. Fluorescent lamp holders
7. Fluorescent thermal starters & sockets
8. Locks & guards
9. Luminaire lamp holders
10. Screw sockets
11. Socket adapters & reducers
12. Quartz lamp holders
13. Weatherproof sockets

Adjustable Fixture Co 104 E Mason St Milwaukee 2 Wis (10)
 Advance Transformer Co 2950 N Western Ave Chicago 18 Ill (1)
 Apollo Lighting Fixture Co Inc 162 W Third St Mt Vernon NY (2)
 Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (6-7-8-9-10-11)
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (10-11)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (3-6-7-9-10-11-12-13)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (6-7)
 Chadsey Corp P O Box 1858 Hartford 1 Conn (8)
 ●CIRCLE F MFG CO 720 Monmouth St Trenton 4 NJ (3-6-7-10-11)—ADV PG 87
 Coll Co of America Inc 207-209 Washington St Northvale NJ (1)
 Crouse-Hinds Co Syracuse 1 NY (10)
 Day-Ray Products Inc 1133 Mission St South Pasadena Calif (1-6)
 Derrick Light Inc P O Box 9335 Houston Texas (10)
 Dialight Corp 60 Stewart Ave Brooklyn 37 NY (2-10)
 Dolco Mfg Co 2350 Curran St Long Beach 5 Calif (13)
 Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill (2-10)
 Dura Electric Lamp Co Inc 62 E Bigelow St Newark 14 NJ (7)
 Duro-Test Corp 2321 Hudson Blvd North Bergen NJ (1-6-7-11)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (2-6-8-10-11-13)
 Earl Electric Mfg Corp 35-20 Borden Ave Long Island City NY (7)
 Electric Cord Co 432 Plane St Newark 2 NJ (8)
 Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (8-10-13)
 France Mfg Co 10325 Berea Rd Cleveland 2 Ohio (1)
 Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (10-11)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-5)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (6-7-9-10-11)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 13)—ADV PG 84-85
 General Scientific Equipment Co Limekiln Pike & Williams Ave Philadelphia 50 Pa
 Gets-A-Lite Co 3865 N Milwaukee Ave Chicago 41 Ill (8)
 Girard-Hopkins 1000 40th Ave Oakland 1 Calif (5)
 Grayco Products 3830 N Kedzie Chicago 18 Ill (1-4-6-7)
 ●HUBBELL (HARVEY) INC State St & Bostwick Ave Bridgeport 2 Conn (6-7-10-11)—ADV PG 42
 Jackson Electrical Co 900 W Van Buren St Chicago 7 Ill (13)
 Jefferson Electric Co 25th & Madison Bellwood Ill (1)
 Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (10)
 Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (1-2-6-7-10-11)
 Ladbury Co Inc Boston Post Rd (P O Box 88) Branford Conn (8)
 Lectrohm Inc 5560 Northwest Highway Chicago 30 Ill (4)
 ●LEVITON MFG CO INC 236 Greenpoint Ave Brooklyn 22 NY (2-6-7-9-10-11-13)—ADV PG 89
 Marvel Lamp Co 307 Newark St Hoboken NJ (7)
 Massey (A H) Inc 111 3rd St (P O Box 206) Derby Conn (10)
 McGill Mfg Co Inc Valparaiso Ind (8)
 Miskella Infra-Red Co E 73rd & Grand Ave Cleveland 4 Ohio (12)
 Morse (Frank W) Co 354 Congress St Boston 10 Mass (2-10-11)
 National Tool & Mfg Co 100 N 12 St Kenilworth NJ (6-13)
 New York Fluorescent Mfg Co Inc 162 Bowery New York 12 NY (7)
 Pass & Seymour Inc Syracuse 9 NY (6-7-10-11-13)
 Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (10-13)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (10)
 Radionic Transformer Co 411 S Sangamon St Chicago 7 Ill (1)
 Ralco Mfg Co 123-141 N Albany Ave Chicago 12 Ill (10)

Rite-O-Lite Co 308 E Washington Blvd Los Angeles Calif (8)
 Robertson Transformer Co Thornton Road Blue Island Ill (1)
 ●RODALE MFG CO INC 6th & Minor Sts Emmaus Pa (10-11-13)—ADV PG 78
 Royal Electric Corp 95 Grand Ave Pawtucket RI (10-13)
 Sola Electric Co 1717 Busse Rd Elk Grove Village Ill (1)
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (6-7-10-11)
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (1-13)
 Triboro Electric Corp 110 Waterberry Brooklyn 6 NY (10-13)
 Stratfield Co 434 Grand St Bridgeport 4 Conn (1)
 Sular Laboratories Inc 1197 McCarter Highway Newark NJ (7)
 Surelite Products Co 368 E 148 St New York 55 NY (7)
 Swedish Iron & Steel Corp 910 Westfield Ave Elizabeth NJ (1-6)
 Sylvania Electric Products Inc 730 Third Ave New York 19 NY (7)
 Union Insulating Co Inc Box 351 Parkersburg W Va (10-13)
 Universal Mfg Corp 29-51 E 6th St Paterson NJ (1)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (10)
 Westinghouse Electric Corp Lighting Div 1216 W 58th St (P O Drawer 5817) Cleveland 1 Ohio (1)
 Westron Corp 652 Hudson St NY 14 NY (7)
 Wide-Lite Corp P O Box 191 Houston 1 Tex (1)
 Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (8-10-13)

SD. BOXES, WIRING

1. Concrete, sidewalk & underground
2. Explosion-proof
3. Floor
4. Interior wall & ceiling
5. Non-metallic
6. Pole base
7. Submersible
8. Weatherproof
9. Vaporproof

Boxes for installation of wiring devices, for splices and connectors, and for pulling conductors into raceways. For boxes enclosing equipment, see "Cabinets" in index.

Adalet Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (1-2-6-7-8-9)
 Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (3)
 Alhambra Foundry Co Ltd 1147 Meridian Ave Alhambra Calif (2-8)
 ●ALL-STEEL EQUIPMENT INC Aurora Ill (4)—ADV PG 77
 Allied Metal Stamping Co 1475 S 6th St Camden 4 NJ (1-4-5)
 Allmetal Engineering Inc 1003 S Date Ave Alhambra Calif (4)
 Alwalt Mfg Co Inc 1706 Lapham Dr (P O Box 1171) Modesto Calif (1-3-7-8)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (1-2-4-8)
 ●ARROLT CORP Foot of Bower St Montgomery Pa (4-8)—ADV PG 97
 ●ARROW CONDUIT & FITTINGS CORP 108-20 180th St Jamaica 33 NY (1-4)—ADV PG 95
 B & C Metal Stamping Co P O Box 2506 Station D Atlanta 18 Ga (3-4)
 Barber Electric Mfg Co Inc 30 Chestnut St N Attleboro Mass (8)
 ●BELL ELECTRIC CO 5735 S Claremont Ave Chicago 36 Ill (8)—ADV PG 75
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (2-8-9)
 Betts & Betts Corp Pomeroy Rd Woodbury Conn (7-8)
 Bonnell Electric Mfg Co Inc 192-194 Chambers St New York 7 NY (2-3-7-8)
 Bowers Mfg Co Inc 6700 Avalon Blvd Los Angeles 3 Calif (4)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (8)
 Buckles (Chris) Inc 4830 S Hoyne Ave Chicago 9 Ill (4)
 Burns (James F) Co 1601 Industrial Highway Pennsauken NJ (1-2-3-4-7-8)
 Calvert Co 19851 Ingersoll Dr Rocky River 16 Ohio (4)
 Columbia Metal Products Co 260 E 143 St New York 51 NY (4-8)
 Crouse-Hinds Co Syracuse 1 NY (1 thru 8)
 Derrick Light Inc P O Box 9335 Houston Texas (7-8-9)
 Electrical Fittings Corp 123 Smith St East Farmingdale NY (4)
 Eliza Metal Products Co Box 408 Bridgeville Pa (4)
 Empire Metal Box Co Inc 68 Meserole St Brooklyn 6 NY (8)
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore (1-3-8-9)
 ●FULLMAN MFG CO 1209-1215 Jefferson St Latrobe Pa (3-6)—ADV PG 112

G & W Electric Specialty Co 3500 W 127 St Blue Island Ill (1-2-7)
 Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (2-7-8)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 9)—ADV PG 84-85
 General Metals Inc 858 Goldsboro Greensboro NC (3-7-8)
 Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif (1-2-6-7-8)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (4-8)—ADV PG 2
 ●HOFFMANN ENGINEERING CORP 1050 Tyler St Anoka Minn (6-8)—ADV PG 110
 ●HOPE ELECTRICAL PRODUCTS CO INC 27 Long Ave Hillside NJ (1-2-6-7-8)—ADV PG 88
 Huenefeld Co Engineered Products Div 2701 Spring Grove Ave Cincinnati 25 Ohio (8)
 Kees (F D) Mfg Co 700 Park Ave Beatrice Neb (8)
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich (4-8)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1-2-8)
 Kim Lighting & Mfg Co Inc 1467 N Lidcombe Ave El Monte Calif (7-8)
 Kraloy-Chemtrol Co Electrical Conduit Div 402 W Central Ave Santa Ana Calif (5)
 Kuehn Mfg Co 78-80 Shipman St Newark 2 NJ (8-9)
 Lew Electric Fittings Co 627 W Lake St Chicago 6 Ill (3)
 ●MASON (LE) CO 98 Business St (Hyde Park) Boston 36 Mass (2-8)—ADV PG 82
 McKinstry Metal Works Inc 285 McKinstry Ave Chicago 2 Mass (8)
 Meco Metal Box & Panel Mfg Co Inc 2522 W Huntington St Phila 32 Pa (2-8)
 Moldcast Mfg Co 236 South St Newark 14 NJ (8)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-3)
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (2-8)
 ●O Z ELECTRICAL MFG CO INC 262 Bond St Brooklyn 17 NY (2-7-8)—ADV PG 100
 Parker Electrical Mfg Co 221 Washington St Oakland 7 Calif (4-8)
 Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (8-9)
 Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville LI NY (1-4-8)
 Piquip Inc 5620 New Peachtree Rd Chamblee Ga (3-7)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (4)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (2-8)
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky (4-8)
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (1-2-8)
 Raco Mfg Co 123-141 N Albany Ave Chicago 12 Ill (2)
 Richards (J R) Co P O Box 482 Carnegie Pa (1-3-4-5)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (1-2-3-4-7-8)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (2-4-8)
 Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (8)
 ●SPRING CITY ELECTRICAL MFG CO Spring City 85 Pa (1-2-3-4-6-7-8)—ADV PG 114-121
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (1-3-4)
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (4-7-8-9)
 Sun Electric Products Inc 28 S Day St Orange NJ (4)
 TA Mfg Corp 4607 Alger St Los Angeles 39 Calif (7)
 Thepitt Mfg Co Gregg & Hammond Sts Carnegie Pa (4)
 Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (3-8)
 Union Insulating Co Inc Box 351 Parkersburg W Va (4-5)
 V V Fittings Co P O Box 1253 Merchantville NJ (4)
 Valen Mfg Co 6725 Machinery Ave Cleveland 3 Ohio (4)
 Wiegmann (E M) & Co Inc Freeburg Ill (1-3-4-5)
 Williams (H E) Products Co 106 S Main St Carthage Mo (4)
 Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (8)
 Young Electric & Mfg Co Inc 2134 Curtis Denver 5 Colo (1-3-8)

SE. BOX, HARDWARE

1. Covers & plates
2. Hickeys
3. Knockout blanks
4. Studs
5. Supports & hangers
6. Cable-to-box connectors
7. Weatherproof box covers & plates
8. Floor outlet nozzles
9. Explosion-proof unions
10. Lamp holders & spreaders
11. Reducing washers

Accessories used with wiring boxes. See also "Fixture Hangers" and "Conduit Fittings" in index.

Adalet Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (6)
 Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (8)
 All-Steel Equipment Inc Aurora Ill (1-5)
 Allen-Stevens Conduit Fittings Corp 33-53 62nd St Woodside 77 NY (6)
 Allied Industries Inc P O Box 119 Ogallala Neb (6)
 Allied Metal Stamping Co 1475 S 6th St Camden 4 NJ (1)
 Allmetal Engineering Inc 1003 S Date Ave Alhambra Calif (1-3)
 Anderson Electric Corp P O Drawer 2151 Birmingham 1 Ala (6)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (1-2-3-5-6)
 ●ARROLEY CORP Foot of Bower St Montgomery Pa (1-3-5)—ADV PG 97
 ●ARROW CONDUIT & FITTINGS CORP 108-20 180th St Jamaica 33 NY (1-5)—ADV PG 95
 Arrow-Hart & Hegeman Electric Co 103 Hawthorn St Hartford 6 Conn (1)
 Badger Die Casting Corp 201 W Oklahoma Ave Milwaukee 7 Wis (6)
 ●BALL ELECTRIC CO 5735 S Claremont Ave Chicago 36 Ill (1-7)—ADV PG 75
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (1)
 Betts & Betts Corp Pomeroy Rd Woodbury Conn (7)
 Blackhawk Industries 250 S Main St Dubuque Iowa (3-5-11)
 Bowers Mfg Co Inc 6700 Avalon Blvd Los Angeles 3 Calif (1 thru 5)
 Bridgeport Fittings Inc 209 Center St Bridgeport 2 Conn (2-4-6)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (1)
 Buchanan Electrical Products Corp 434 U S Route 22 Hillside NJ (3-6)
 Burbank Electrical Products 215 W Palm Ave P O Box 7 Burbank Calif (5)
 Burns (James F) Co 1601 Industrial Highway Pennsauken NJ (1-3-5)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (1)
 Circle F Mfg Co 720 Monmouth St Trenton 4 NJ (1)
 Conduit Pipe Products Co 157 W Fulton St Columbus 16 Ohio (1)
 Crouse-Hinds Co Syracuse 1 NY (1-3-5)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (6)
 Dolco Mfg Co 2350 Curry St Long Beach 5 Calif (7-10)
 Dossert Mfg Corp 249-255 Huron St Brooklyn 22 NY (6)
 Duro Fittings Co 2210 S Davis Ave Los Angeles 22 Calif (4-6)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1)
 Earl Electric Mfg Corp 35-20 Borden Ave Long Island City NY (1)
 Electrical Fittings Corp 123 Smith St East Farmingdale NY (1)
 Elliott Electric Mfg Corp 50-30 98th St Corona 45 NY (1-2-3-4-5-6)
 Fastway Fasteners Inc 2197 E 28 St Lorain Ohio (4)
 Fullman Mfg Co 1209-1215 Jefferson St Latrobe Pa (1-5)
 Gedney Electric Co Americas Bldg Radio City NY 20 NY (2-3-4-6)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1)
 General Metals Inc 858 Goldsboro Greensboro NC (1-3-5-7)
 Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif (1-3-4-5-7)
 Green (R H) Inc 1201 24th St Oakland 7 Calif (3-11)
 Halex Die Casting Co 8640 Bessemer Cleveland 27 Ohio (6)
 Hall (William H) Co Windsor Locks Conn (5)
 Heyman Mfg Co Kenilworth 20 NJ (6)
 Hoffman Engineering Corp 1050 Tyler St Anoka Minn (3)
 Holub Industries Inc 442 Elm St Sycamore Ill (11)
 Hubbell (Harvey) Inc State St & Bostwick Ave Bridgeport 2 Conn (1)
 Huenefeld Co Engineered Products Div 2701 Spring Grove Ave Cincinnati 25 Ohio (1)
 Ideal Industries Inc 5136 Park Ave Sycamore Ill (5)
 Jordan Industries Inc 3030 N W 75 St Miami 47 Fla (1-9)
 Kees (F D) Mfg Co 700 Park Ave Beatrice Neb (5)
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich (1 thru 5)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (6)
 Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (1)
 Kruse-Rieke Auburn Ind (5)
 ●LEVITON MFG CO INC 236 Greenpoint Ave Brooklyn 22 NY (1)—ADV PG 89
 Lew Electric Fittings Co 627 W Lake St Chicago 6 Ill (1-3)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (3-5)

M & W Electric Co Inc S Walnut St (P O Box 350) East Palestine Ohio (6)
 Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (1-3-4-5)
 Massey (A H) Inc 111 3rd St (P O Box 206) Derby Conn (1)
 McKinley (Ben P) Co 522 S Clinton St Chicago 7 Ill (1-5)
 Metaelectronics Inc 627 Greenwich St New York 14 NY (2-4-6)
 Midwest Electric Mfg Co 1639 Walnut St Chicago 12 Ill (2-3-4-6-11)
 O Z Electrical Mfg Co Inc 262 Bond St Brooklyn 17 NY (6)
 Paine Co & Westgate Rd Addison Ill (5)
 Pass & Seymour Inc Syracuse 9 NY (1-7)
 Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (7)
 ●MINERALALL ELECTRIC CO 25 N Peoria St Chicago 7 Ill (4)—ADV PG 103
 Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville NY (1)
 Power-Strut Div Van Huffer Tube Corp Dietz Rd Warren Ohio (5)
 Product Electric Corp 932 Rogers Pl New York 59 NY (1-3-5-6-9-11)
 Pucel Enterprises Inc 3746 Kelley Ave Cleveland 14 Ohio (1)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (6)
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky (1)
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (3)
 Raico Mfg Co 123-141 N Albany Ave Chicago 12 Ill (9)
 Rattan Mfg Co 10 Wall St (P O Box 1745) New Haven 7 Conn (2-4-6)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (6)
 Redi-Bolt Inc 5334 Indianapolis Blvd East Chicago Ind (4-5)
 Reichert Float and Mfg Co 2242 Smead Ave Toledo 6 Ohio (3)
 Richards (J R) Co P O Box 482 Carnegie Pa (1-3-4-5)
 Robinson Bracket Co 705 N 79 St East St Louis Ill (5)
 ●RODALE MFG CO INC 6th & Minor Sts Emmaus Pa (1)—ADV PG 78
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (6)
 ●SIERRA ELECTRIC CORP 15100 S Figueroa Gardena Calif (1-7)—ADV PG 115
 Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (1)
 ●SPRING CITY ELECTRICAL MFG CO Spring City 85 Pa (1)—ADV PG 114-121
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (1)
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (1-2-3-4-5)
 Steel Electric Products Co Inc 5602 18th Ave Brooklyn 4 NY (1 thru 5)
 Stenco Mfg Co Box 9024 Stockyards Sta Denver 16 Colo (1-5)
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (1-7)
 Thepitt Mfg Co Gregg & Hammond Sts Carnegie Pa (6)
 Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (1-2-3-5-6-7)
 Tomic Sales & Engineering Co 2000 Sherwood Ave Detroit 34 Mich (4-6)
 Unimatic Corp Sherwood Lane Caldwell NJ (6)
 Union Insulating Co Inc Box 351 Parkersburg W Va (7)
 Valen Mfg Co 6725 Machinery Ave Cleveland 3 Ohio (5)
 Wiegmann (E M) & Co Inc Freeburg Ill (5)
 Williams (H E) Products Co 106 S Main St Carthage Mo (1-5)
 Yorkville Metal Products Co 627 Greenwich St New York 14 NY (2-4-6)

5F. CABINETS, HOUSINGS & ENCLOSURES

1. Fuse & cutout
2. Meter
3. Panelboard
4. Switch & circuit breaker
5. Transformer
6. Weatherproof
7. Explosion-proof
8. Trolley wire protective enclosures

Enclosures only; used for mounting and protection of equipment.

Adalet Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (5-6-7)
 Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (1-2-3-4-5-6)
 Alwalt Mfg Co Inc 1706 Lapham Dr (P O Box 1171) Modesto Calif (1-2-3-5)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (7)
 Atlas Metal Industries 259 W 23 St Hialeah Fla (3-5-6)
 B & C Metal Stamping Co P O Box 2506 Station D Atlanta 18 Ga (6)
 Barber Electric Mfg Co Inc 30 Chestnut St N Attleboro Mass (1-5)
 Betts & Betts Corp Pomeroy Rd Woodbury Conn (6)

Bonnell Electric Mfg Co Inc 192-194 Chambers St New York 7 NY (1-3-4-6-7)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (3-4)
 Burns (James F) Co 1601 Industrial Highway Pennsauken NJ (1-2-3-4-5)
 Cleveland Switchboard Co 2925 E 79 St Cleveland 4 Ohio (3)
 Code Corp 4566 Baker St Philadelphia 28 Pa (2)
 Columbia Metal Products Co 260 E 143 St New York 51 NY (1-3-5)
 Continental Electric Equipment Co Box 1055 Cincinnati 1 Ohio (3-5)
 Crouse-Hinds Co Syracuse 1 NY (1-3-4-7)
 Curlee (W F) Mfg Co P O Box 776 Houston 1 Tex (4-5-6-7)
 Derrick Light Inc P O Box 9335 Houston Texas (4-6)
 Duncan Electric Mfg Co Lafayette Ind (2)
 Eliza Metal Products Co Box 408 Bridgeville Pa (3)
 Empire Metal Box Co Inc 6 Meserole St Brooklyn 6 NY (1-3-4-5-6)
 Empire Switchboard Co Inc 810 Fourth Ave Brooklyn 32 NY (3-4-6)
 Falstrom Co 62 Falstrom Court Passaic NJ (2-3-4-5)
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore (1 thru 6)
 Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (5)
 General Electric Co Distribution Assemblies Dept 41 Woodford Ave Plainville Conn (3)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2 thru 7)
 General Metals Inc 858 Goldsboro Greensboro NC (1-2-5-6-7)
 Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif (1-2-5-6-7)
 ●HOFFMANN ENGINEERING CORP 1050 Tyler St Anoka Minn (1 thru 7)—ADV PG 110
 Hope Electrical Products Co Inc 27 Long Ave Hillside NJ (1-5)
 ●HUENEFELD CO ENGINEERING PRODUCTS DIV 2701 Spring Grove Ave Cincinnati 25 Ohio (1-3-4-5)—ADV PG 98
 Kees (F D) Mfg Co 700 Park Ave Beatrice Neb (2-5)
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich (1 thru 5)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (3-4)
 Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (3-4-5)
 Lee Products Co 3 Garvey St Everett 49 Mass (1-2-3-5-6)
 Leonard Electric Mfg Co 3907 Perkins Ave Cleveland 14 Ohio (3-4-5)
 Leviton Mfg Co Inc 236 Greenpoint Ave Brooklyn 22 NY (1)
 Lexington Electric Products Co Inc 12 Chapel St Newark 5 NJ (1 thru 6)
 Littleford Bros Inc 453 E Pearl St Cincinnati 2 Ohio (3)
 McKinstry Metal Works Inc 285 McKinstry Ave Chicopee Mass (1-3-4-5-6)
 Meco Metal Box & Panel Mfg Co Inc 2522 W Huntington St Phila 32 Pa (1-3-5)
 Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 5 NY (1 thru 6)
 Midwest Electric Products Inc 1515 N Front St Mankato Minn (1-4)
 Moldcast Mfg Co 236 South St Newark 14 NJ (6)
 Mullerbach Div Electric Machinery Mfg Co 2100 E 27 St Los Angeles 58 Calif (3)
 Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16 NY (4-5)
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (3-7)
 Northbrook Products Inc Industrial Div 624 S Michigan Ave Chicago 5 Ill (8)
 Palmer Electric & Mfg Co 24 Water St Wakefield Mass (2)
 Parker Electrical Mfg Co 221 Washington St Oakland 7 Calif (1 thru 6)
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky (1-2-3-4-5)
 Russell & Stoll Co Inc 125 Barclay St New York 7 NY (7)
 ●SPRING CITY ELECTRICAL MFG CO Spring City 85 Pa (1 thru 5-7)—ADV PG 114, 121
 Square D Co Executive Plaza Park Ridge Ill (1 thru 5)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (3)
 Sun Electric Products Inc 28 S Day St Orange NJ (1-3-5)
 TA Mfg Corp 4607 Alger St Los Angeles 39 Calif (6)
 Union Insulating Co Inc Box 351 Parkersburg W Va (6)
 V V Fitting Co P O Box 1253 Merchantville NJ (1)
 Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky (1-3-4-5)
 Wiegmann (E M) & Co Inc Freeburg Ill (3-5-6)
 Young Electric & Mfg Co Inc 2134 Curtis Denver 5 Colo (1-2-3)

5G. FIXTURE HANGERS & SUPPORTS

1. Fixed
2. Disconnecting type

Stems, channels, brackets and chain for permanent support of lighting fixtures. For poles and standards, see index.

Acme Lighting & Mfg Co 949 E 31 St Los Angeles 11 Calif (1)
Acme Steel Co 135th St & Perry Ave Chicago 27 Ill (1)
Allen-Stevens Conduit Fittings Corp 33-53 62nd St Woodside 77 NY (1)
Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (1)
Bowers Mfg Co Inc 6700 Avalon Blvd Los Angeles 3 Calif (1)
Crouse-Hinds Co Syracuse 1 NY (1)
Eagle Mfg Co 3508 Avalon Blvd Los Angeles 11 Calif (1)
Elliott Electric Mfg Corp 50-30 98th St Corona 68 NY (1)
Gedney Electric Co Americas Bldg Radio City NY 20 NY (1)
Hail (William H) Co Windsor Locks Conn (1)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (1)

●IDEAL INDUSTRIES INC 5136 Park Ave Sycamore Ill (1)—ADV PG 92
Jackson Electrical Co 900 W Van Buren St Chicago 7 Ill (1)
Kees (F D) Mfg Co 700 Park Ave Beatrice Neb (1)
Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1)
Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (1)
Metalectrics Inc 627 Greenwich St New York 14 NY (1)
Modern Light Co Inc 7809 Maplewood Industrial Court St Louis 17 Mo (1)
Multi-A-Frame Corp 6401 Epworth Blvd Detroit 10 Mich (1)
Multi Electric Mfg Inc 4223 W Lake St Chicago 24 Ill (1)
Myers Electric Products Inc 3019 S Vail Ave Los Angeles 22 Calif (2)
Paine Co 6 Westgate Rd Addison Ill (1)
Pfaff & Kendall 84 Foundry St Newark 5 NJ (2)
●POWER-STRUT DIV Van Huffel Tube Corp Dietz Rd Warren Ohio (1-2)—ADV PG 101
Pyle-Newton Co 1344 N Kostner Ave Chicago 51 Ill (1)
Quadrangle Mfg Co 32 S Peoria St Chicago 7 Ill (1)
Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (1)

●STEEL CITY ELECTRIC CO 1207 Columbus Ave Pittsburgh 33 Pa (1)—ADV PG 91
Steel Electric Products Co Inc 5602 18th Ave Brooklyn 4 NY (1)
Thompson Electric Co P O Box 873 Cleveland 22 Ohio (2)
Tomic Sales & Engineering Co 20000 Sherwood Ave Detroit 34 Mich (1)
Unistrut Products Co 933 Washington Blvd Chicago 7 Ill (1)
Versabar Corp 14 Whyte St Jersey City NJ (1)
Wil-Son Mfg Co Cloverport Ky (1)
Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (2)
Yorkville Metal Products Co 627 Greenwich St New York 14 NY (1)

SH. METER SOCKETS & MOUNTINGS

Sockets, troughs and accessories for kw-hr meters. See Sec. 5F for meter cabinets.

Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo
Anchor Mfg Co P O Box 959 Manchester NH
B & C Metal Stamping Co P O Box 2506 Station D Atlanta 18 Ga
Code Corp 4566 Baker St Philadelphia 28 Pa
Delta Metal Products Co 476 Flushing Ave Brooklyn 5 NY
Electra Mfg Co Industrial Park Middleton NY
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
Kees (F D) Mfg Co 700 Park Ave Beatrice Neb
Murray Mfg Corp 1250 Atlantic Ave Brooklyn 16 NY
Palmer Electric & Mfg Co 24 Water St Wakefield Mass
Square D Co Executive Plaza Park Ridge Ill
Superior Switchboard & Devices Div Union Metal Mfg Co P O Box 590 Canton 1 Ohio
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
5-1	Cast-Aluminum Explosion Proof and Weather Proof Housings; 30p; Cat. No. 562 (Adalet)
5-2	Wiring Devices; 314p; Cat. No. WD-29 (Arrow-Hart)
5-3	Wiring Devices; 70p; Cat. No. C-100 (Bryant)
5-4	Wiring Devices; 96p (Eagle)
5-5	Fluorescent Ballasts; 24p; Cat. No. GEC-983 (GE Co.)
5-6	Meter Sockets; 12p; Cat. No. GEA-7531 (GE Co.)
5-7	The GESCO Estimator; 136p; Cat. No. 124 (General Electric Supply)
5-8	Wiring Devices; 172p; Cat. No. 60 (Leviton)
5-9	Electrical Specialties; 40p; Cat. No. 84 (McGill)
5-10	Switches and Specialties; 46p; Cat. No. 84-A (McGill)
5-11	Electrical Enclosures; 28p (McKinstry)
5-12	Wiring Devices; 80p; Cat. No. 60 (Pass & Seymour)
5-13	Engineered Wiring Devices; 28p; Cat. No. W-61 (Perfect-Line)
5-14	Electrical Wiring Devices; 48p; Cat. No. 17 (Triboro)
5-15	Marine and Industrial Equipment; 86p; Cat. No. 6 (Van Brunt)
5-16	Laboratory and Hospital Electrical Fixtures; 20p (Water Saver)
5-17	Switch and Outlet Boxes; 20p; Cat. No. 10-61 (Wiegmann)

SECTION 6. CONDUCTORS AND CONNECTORS

Wire and cable are listed in 6A, 6B and 6C by code letter designations used in the National Electrical Code; Sections 6D and 6E list applications.

Wire and cable tools are listed in 12B; underground supports, poles, etc. in Sec. 1; raceways and enclosures in Sec. 7.

6A. BUILDING & POWER CABLE

1. A, AA, AI, AIA—asbestos
2. AC, ACT, ACV—armored cable
3. ACL—armored cable, lead-covered
4. AVA, AVB, AVL—asbestos & varnished cambric
5. MI—mineral-insulated, metal-sheathed
6. NM, NMC—non-metallic sheathed
7. Paper, underground service
8. R—code rubber
9. RH, RHM—heat-resistant rubber
10. RH-RW, RHW—moisture & heat-resistant rubber
11. RW—moisture-resistant rubber
12. RU—latex rubber
13. RUH—heat-resistant latex rubber
14. RUW—moisture-resistant latex rubber
15. SB—slow-burning
16. SE, ASE, USE—service entrance
17. T—thermoplastic
18. TA—thermoplastic & asbestos
19. TW—moisture-resistant thermoplastic
20. UF—underground feeder & branch circuit
21. V—varnished cambric
22. WP—weatherproof

23. THW—heat-resistant thermoplastic
24. TBS—thermoplastic & fibrous braid
25. SA—silicone asbestos
26. SEU—service entrance, armored
27. Aluminum (ACSR), bare
28. Aluminum (ACSR), covered
29. Unit assembly, cable in plastic duct

Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn (8-17-19)
Acorn Insulated Wire Co 36 Freeman St Pawtucket RI (1-2-4-6-8-9-10-11-16-17-18-19-20-21)
American Electric Cable Co 181 Appleton St Holyoke Mass (19)
American Flexible Conduit Co Inc 969 Shawmut Ave New Bedford Mass (2)
American Insulated Wire Corp 36 Freeman St Pawtucket RI (1-2-4-6-8-9-10-11-17-18-19-20-21-22)
American Metal Moulding Co 146 Coit St Irvington NJ (2-3-19)
American Steel & Wire Div United States Steel Corp Rockefeller Bldg Cleveland 13 Ohio (1-3-7-8-9-10-11-15-16-17-18-19-21-22)
Anaconda Wire & Cable Co 25 Broadway New York 4 NY (4-6 thru 11-16 thru 23-26-27-28)
Carol Cable Co 190 Middle St Pawtucket RI (8-9-10-11-20)
Chester Cable Corp Oakland Ave Chester NY (2-3-6-17-20)
Circle Wire and Cable Corp 5500 Maspeth Ave Maspeth LI NY (2-3-6-8-9-10-11-16-17-19-20-21-22)
Clifton Conduit Co 3300 Eastbourne Ave Baltimore 24 Md (2)
●COLLYER INSULATED WIRE CO 100 Higginson Ave Lincoln RI (1-4-6-9-10-16-18-19-20-21-23-25-26)—ADV PG 106
Columbia Cable & Electric Corp 255 Chestnut St Brooklyn 8 NY (2-3-6-17-19-20-26)
Continental Wire Corp P O Box 366 Wallingford Conn (1-4-17-18-19-20-21-23-24)
Copperweld Steel Co Wire and Cable Div Glassport Pa (22)
Cornish Wire Co 50 Church St New York 17 NY (17)
●CRESCENT INSULATED WIRE & CABLE CO 319 N Olden Ave Trenton 5 NJ (2-3-6-9-10-11-16-17-19-20-21-23-26)—ADV PG 80

Diamond Wire & Cable Co 445 Park Ave Sycamore Ill (2-3-10-11-16-17-19-20-22-23-26)
Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (2-3-6-8-9-10-11-16-17-19-20-22-23)
●ETICO WIRE & CABLE CORP 75 Onderdonk Ave Brooklyn 37 NY (2-6-16-17-19-20-23)—ADV PG 90
●GENERAL CABLE CORP 730 Third Ave New York 17 NY (1 thru 11-16 thru 22-26)—ADV PG 108-109
General Electric Co Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn (1-2-3-4-6-9-10-11-16-18-19-20-21)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 7-9-10-11-15-16-18 thru 28)—ADV PG 84-85
Hatfield Wire and Cable Div Continental Copper & Steel Indus Inc 487 Hillside Ave Hillside 5 NJ (2-6-9-10-11-16-19-20)
Kaiser Aluminum & Chemical Sales Inc Kaiser Center 300 Lakeside Dr Oakland 12 Calif (6-8 thru 14 16-17-19-20-22)
Kennecott Wire & Cable Div Okonite Co Phillipsdale (Rumford 16) RI (3-7-15-21-22)
Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (1-5-18-23-24-25)
Naragansett Wire Co 1125 Main St Pawtucket RI (6-9-16-19-20-22-23)
National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-2-3-4-6-18-20-21)
Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (5)
Normandy Electric Wire Corp 125 Second St Brooklyn 31 NY (2)
Okonite Co Passaic NJ (1-4-7-9-10-11-16-19-21-22)
Olin Conductors Metals Div P O Box 989 Chattanooga Tenn (27-28)
Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (1-2-4-6-7-9-10-11-16-18 thru 26)
Plastic Wire & Cable Corp E Main St Jewett City Conn (6-17-19-20-23-24)
Plastoid Corp 42-61 24th St LIC 1 NY (1-17-18-19-20)
Radix Wire Co 26260 Lakeland Blvd Cleveland 32 Ohio (1-2-4-6-17-18-19-20)
Reynolds Metals Co Richmond 18 Va (3-6-7-9-10-19 thru 23-26-27-28)

Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI (1-4-6-17-18-19-20)
Rockbestos Wire & Cable Co Nicolli and Canner Sts New Haven 4 Conn (1-4-18-21-24-25)
●ROME CABLE DIV OF ALCOA 421 Ridge St Rome NY (6-9-10-11-16-17-19-20-22-23-24-28)—ADV PG 113
Royal Electric Corp 95 Grand Ave Pawtucket RI (1)
Simplex Wire & Cable Co 79 Sidney St Cambridge 39 Mass (2-4-6 thru 11-17-19-20-21-23)
Southwire Co Carrollton Ga (6-16-17-19-20-22-23)
Triangle Conduit & Cable Co Inc Triangle & Jersey Aves New Brunswick NJ (1 thru 4-6-8 thru 11-16-17-19-20-21-29)
Victor Electric Wire & Cable Corp 618 Main St West Warwick RI (19)
Walker Brothers P O Box 33 Conshohocken Pa (6-9-10-11-16-19-20-22)
Western Insulated Wire Co 2425 E 30th St Los Angeles 58 Calif (1-2-3-4-6-9-10-11-16-21)
Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (1-2-4-17)

6B. FIXTURE WIRE

1. AF—heat-resistant asbestos-covered
2. CF—heat-resistant cotton-covered
3. FF—rubber-covered flexible stranding
4. FFH—heat-resistant rubber-covered flexible stranding
5. RF—rubber-covered, solid or 7-strand
6. RFH—heat-resistant rubber-covered solid or 7-strand
7. SF—silicone rubber, solid or 7-strand
8. SFF—silicone rubber, flexible stranding
9. TF—thermoplastic-covered, solid or stranded
10. TFF—thermoplastic-covered, flexible stranding

Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn (5-9-10)
Acorn Insulated Wire Co 36 Freeman St Pawtucket RI (1 thru 6-9-10)
American Electric Cable Co 181 Appleton St Holyoke Mass (9-10)
American Insulated Wire Corp 36 Freeman St Pawtucket RI (1 thru 6-9-10)
American Steel & Wire Div United States Steel Corp Rockefeller Bldg Cleveland 13 Ohio (5-6-9-10)
Anaconda Wire & Cable Co 25 Broadway New York 4 NY (9-10)
Apex Wire & Cable Corp 237 37th St Brooklyn 32 NY (9-10)
Brand-Rex Div American Enka Corp 31 Sudbury Rd Concord Mass (9-10)
Chester Cable Corp Oakland Ave Chester NY (9-10)
Circle Wire and Cable Corp 5500 Maspeth Ave Maspeth LI NY (3-5-6-9-10)
●COLLYER INSULATED WIRE CO 100 Higginson Ave Lincoln RI (1-3 thru 10)—ADV PG 106
Continental Wire Corp P O Box 366 Wallingford Conn (1-2-7-8-9-10)
Cornish Wire Co 50 Church St New York 17 NY (3-9-10)
●CRESCENT INSULATED WIRE & CABLE CO 319 N Olden Ave Trenton 5 NJ (9-10)—ADV PG 80
Diamond Wire & Cable Co 445 Park Ave Sycamore Ill (1 thru 10)
Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (5-6-7-8-9-10)
●ETCO WIRE & CABLE CORP 75 Onderdonk Ave Brooklyn 37 NY (9)—ADV PG 90
●GENERAL CABLE CORP 730 Third Ave New York 17 NY (1 thru 10)—ADV PG 108-109
General Electric Co Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn (1-3-4-7-8-9-10)
Hatfield Wire and Cable Div Continental Copper & Steel Indus Inc 487 Hillside Ave Hillside 5 NJ (6-9-10)
Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (1-7-8-10)
Miller Electric Co 120 Main St Pawtucket RI (1-2-9-10)
National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-7-8)
Okonite Co Passaic NJ (1-3-4-5-6-8-9-10)
Phalo Plastics Corp 530 Boston Turnpike Shrewsbury Mass (9-10)
Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (1-3 thru 10)
Philadelphia Insulated Wire Co 333 New Albany Rd Moorestown NJ (9-10)
Plastic Wire & Cable Corp E Main St Jewett City Conn (9-10)
Plastoid Corp 42-61 24th St LIC 1 NY (9-10)
Radix Wire Co 26260 Lakeland Blvd Cleveland 32 Ohio (1-9-10)
Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI (1-9-10)
Rockbestos Wire & Cable Co Nicolli and Canner Sts New Haven 4 Conn (1-7-8)
●ROME CABLE DIV OF ALCOA 421 Ridge St Rome NY (3 thru 10)—ADV PG 113
Royal Electric Corp 95 Grand Ave Pawtucket RI (1-2-3-9-10)

Simplex Wire & Cable Co 79 Sidney St Cambridge 39 Mass (3 thru 10)
Southwire Co Carrollton Ga (9-10)
Surprenant Mfg Co 199 Washington St Boston 8 Mass (9-10)
Triangle Conduit & Cable Co Inc Triangle & Jersey Aves New Brunswick NJ (1 thru 10)
Victor Electric Wire & Cable Corp 618 Main St West Warwick RI (9-10)
Walker Brothers P O Box 33 Conshohocken Pa (9-10)
Western Insulated Wire Co 2425 E 30th St Los Angeles 58 Calif (1-4)

6C. FLEXIBLE CORD

1. AFC, AFPD, AFPO—asbestos-covered, heat-resistant
2. AFS, AFSJ—rubber-jacketed, heat-resistant
3. AVPD, AVPO—heat- and moisture-resistant
4. C—lamp
5. CA—armored
6. CFC, CFPD, CFPO—cotton-covered, heat-resistant
7. E, EO, ET—elevator cable
8. HC, HPD—heater
9. HPN—heater, all, neoprene
10. HS—heater, jacketed
11. HSJ—heater, rubber-jacketed
12. K—heavy-duty, braided
13. P—reinforced
14. PD—twisted portable
15. PO—parallel
16. PW—reinforced, moistureproof
17. S, SO, ST—hard service
18. SJ, SJO, SJT—hard service, junior
19. SP—parallel, all rubber
20. SPT—parallel, all plastic
21. SR, SRT—range cable
22. SV, SVT—vacuum cleaner
23. TP, TPT, TS, TST—tinsel

A K Electric Corp 231 Front St Brooklyn 1 NY (18-20)
Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn (2-4-7 thru 23)
Acorn Insulated Wire Co 36 Freeman St Pawtucket RI (1-3-4-6-8 thru 22)
Alpha Wire Corp 200 Varick St New York 14 NY (17-18-19-20)
American Insulated Wire Corp 36 Freeman St Pawtucket RI (1-2-4-6-8-9-10-11-13-14-15-17-18-19-20-22)
American Steel & Wire Div United States Steel Corp Rockefeller Bldg Cleveland 13 Ohio (7-17-18)
Anaconda Wire & Cable Co 25 Broadway New York 4 NY (12-17-18)
Apex Wire & Cable Corp 237 37th St Brooklyn 32 NY (8-15-20)
Belden Mfg Co P O Box 5070A Chicago 80 Ill (8-9-10-11-17-18-19-20-21-22-23)
Carol Cable Co 190 Middle St Pawtucket RI (1-2-4-8-9-10-11-14-15-17 thru 22)
Chester Cable Corp Oakland Ave Chester NY (17-18-20-22)
Circle Wire and Cable Corp 5500 Maspeth Ave Maspeth LI NY (4-17 thru 21)
●COLLYER INSULATED WIRE CO 100 Higginson Ave Lincoln RI (1-2-3-7-17-18-21-22)—ADV PG 106
Columbia Cable & Electric Corp 255 Chestnut St Brooklyn 8 NY (5)
Continental Wire Corp P O Box 366 Wallingford Conn (1-3-6)
Cornish Wire Co 50 Church St New York 17 NY (4-8-9-11-15-17-18-20-22)
●CRESCENT INSULATED WIRE & CABLE CO 319 N Olden Ave Trenton 5 NJ (7-17)—ADV PG 80
Diamond Wire & Cable Co 445 Park Ave Sycamore Ill (4-5-6-8-10-14-15-17 thru 23)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (20)
Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (4-7-8-9-11-12-13-15-17-18-19-20-21-22)
●GENERAL CABLE CORP 730 Third Ave New York 17 NY (1 thru 22)—ADV PG 108-109
General Electric Co Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn (1-2-3-8-9-15-17-18-19-20-21-22)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 22)—ADV PG 84-85
General Insulated Wire Works 69 Gordon Ave Providence 5 RI (8 thru 11-17 thru 23)
Hatfield Wire and Cable Div Continental Copper & Steel Indus Inc 487 Hillside Ave Hillside 5 NJ (4-7 thru 23)
Kaiser Aluminum & Chemical Sales Inc Kaiser Center 200 Lakeside Dr Oakland 12 Calif (7-17-18-20-22)
Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (1)
Miller Electric Co 120 Main St Pawtucket RI (1-3-4-6-8-14-15-17-18-20-21-22-23)
National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-2-18)
Normandy Electric Wire Corp 125 Second St Brooklyn 31 NY (17)

Okonite Co Passaic NJ (2-4-7-17 thru 21)
Phalo Plastics Corp 530 Boston Turnpike Shrewsbury Mass (18-20-21-22-23)
Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (7-8-9-17-18-19-20-22)
Plastic Wire & Cable Corp E Main St Jewett City Conn (17-18-20-21-22-23)
Plastoid Corp 42-61 24th St LIC 1 NY (5-20)
Radix Wire Co 26260 Lakeland Blvd Cleveland 32 Ohio (1-20)
Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI (1-4-8-15-20-22)
Rockbestos Wire & Cable Co Nicolli and Canner Sts New Haven 4 Conn (1-3)
Roebbling's (John A) Sons Corp 640 S Broad St Trenton 2 NJ (7-17)
●ROME CABLE DIV OF ALCOA 421 Ridge St Rome NY (7-17-18-19-20)—ADV PG 113
Royal Electric Corp 95 Grand Ave Pawtucket RI (1-4-6-8-9-10-11-13 thru 23)
Shallcross Controls Inc 2217-21 N 31 St Milwaukee 8 Wis (1)
Simplex Wire & Cable Co 79 Sidney St Cambridge 39 Mass (2-3-5-7-9-10-12-13-14-16 thru 21)
Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (8-10-15-17-18-22)
Victor Electric Wire & Cable Corp 618 Main St West Warwick RI (18-20-22-23)
Walker Brothers P O Box 33 Conshohocken Pa (17-21)
Western Insulated Wire Co 2425 E 30th St Los Angeles 58 Calif (2-14-15-17-18-21-22)
Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (7-17 thru 20-22-23)
Whitney Blake Co 102 Pershing St New Haven 14 Conn (4-9-17-18-19-20-22)
Woodhead (Daniel) Co 15 N Jefferson St Chicago 4 Ill (17-18)

6D. SPECIFIC APPLICATIONS OF WIRE & CABLE

1. Airport
2. Appliance
3. Barn
4. Brewery
5. Bridge
6. Control
7. Electric furnace
8. Elevator
9. Gas tube sign
10. Ground
11. Heater
12. Lamp
13. Magnet
14. Marine
15. Parkway (Suburban)
16. Railway
17. Service drop
18. Service entrance
19. Signal & communications
20. Stage lighting
21. Submarine
22. Thermostat
24. Water-cooled leads
25. Lead wire
26. Electric fence
27. Trolley
28. Annunciator
29. Fixture
30. Bus drop
31. Series street lighting
32. Pump
33. Cathodic protection
34. Trailer
35. High voltage
36. Machine tool
37. Building
38. Portable power
39. High frequency (Litiz)

Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn (1-2-6-8-11-12-15-19-20)
Acorn Insulated Wire Co 36 Freeman St Pawtucket RI (2-3-4-6-10-11-12-17-18-19-20)
Alpha Wire Corp 200 Varick St New York 14 NY (13-25)
Alphaduct Wire & Cable Co 25 Van Dyke Ave (P O Box 709) New Brunswick NJ (19)
American Electric Cable Co 181 Appleton St Holyoke Mass (2-6-9-12-19-20)
American Insulated Wire Corp 36 Freeman St Pawtucket RI (1-2-3-4-6-11-12-15-17-18-19-20)
American Steel & Wire Div United States Steel Corp Rockefeller Bldg Cleveland 13 Ohio (1-2-6-7-8-9-10-11-13 thru 21)
American Super-Temperature Wires Inc Winooski Vt (13)
Anaconda Wire & Cable Co 25 Broadway New York 4 NY (1-2-3-4-6 thru 22-25-27-28-29-30-31-33-35-36-37-38)
Ansonia Wire & Cable Co 111 Martin St Ashton RI (1-6-14-16-19-21)
Apex Wire & Cable Corp 237 37th St Brooklyn 32 NY (2-11-12)

Belden Mfg Co P O Box 5070A Chicago 80 Ill (2-9-11-12-13-14-15-23)
 Brand (William) & Co Inc 51 North St Willimantic Conn (2-6-19)
 Capitol Stage Lighting Co Inc 527 W 45 St New York 36 NY (20)
 Carol Cable Co 190 Middle St Pawtucket RI (1-2-3-4-6-9-11-12-14-17-19-20-22)
 Chester Cable Corp Oakland Ave Chester NY (2-3-6-9-12-19-20)
 Circle Wire and Cable Corp 5500 Maspeth Ave Maspeth LI NY (1-2-3-5-6-8-14-15-17-18-19-20)
 ●COLLYER INSULATED WIRE CO 100 Higginson Ave Lincoln RI (1 thru 8-10-12-14 thru 20-31-33-35-37-38)—ADV PG 106
 Columbia Wire & Supply Co 2850 Irving Park Rd Chicago 18 Ill (19)
 Continental Wire Corp P O Box 366 Wallingford Conn (6-22)
 Copperwell Steel Co Wire and Cable Div Glassport Pa (19)
 ●CORNISH WIRE CO 50 Church St New York 17 NY (2-19-20)—ADV PG 93
 ●CRESCENT INSULATED WIRE & CABLE CO 319 N Olden Ave Trenton 5 NJ (1-3 thru 8-10-14 thru 20-30 thru 38)—ADV PG 80
 Diamond Wire & Cable Co 445 Park Ave Sycamore Ill (2-4-6-7-8-11-12-15-17-18-19-20)
 Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill (25)
 Driver (Wilbur B) Co 1875 McCarter Highway Newark 4 NJ (7-11)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (10-12-28)
 Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (38)
 Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (1-2-3-4-6-8-9-10-11-12-15-17-18-19-20)
 Gar Wood Industries Inc Wayne Mich (23)
 ●GENERAL CABLE CORP 730 Third Ave New York 17 NY (1 thru 22-25-27-28-29 thru 35)—ADV PG 108-109
 General Electric Co Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn (1-2-6-9-11-13-14-15-18-19-21)
 General Insulated Wire Works 69 Gordon Ave Providence 5 RI (2-6-10-11-17-18-19)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (2-6-12-13-17-18)—ADV PG 2
 Hart Mfg Co 164 Bartholomew Ave Hartford Conn (22)
 Hatfield Wire & Cable Div Continental Copper & Steel Indus Inc 467 Hillside Ave Hillside 5 NJ (1-2-3-4-6-8-9-11-12-14 thru 20-29-35)
 Hendrix Wire & Cable Corp Milford NH (17)
 Hiltemp Wires Co 1200 Shames Dr Westbury NY (1-6-13-14-15-16-19-21-25)
 Kaiser Aluminum & Chemical Sales Inc Kaiser Center 300 Lakeside Dr Oakland 12 Calif (1 thru 6-8-10-14 thru 19-21-23-25-30-31-32-34-35)
 Kennecott Wire & Cable Div Okonite Co Phillipsdale (Rumford 16) RI (7-13-16-19)
 Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (6-7-11-22-25)
 Lightning Rod Supply Co Shelton Conn (10)
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (23)
 Markel (L Frank) & Sons Morristown Pa (25)
 Miller Electric Co 120 Main St Pawtucket RI (11-12-19-22-28-29)
 Narragansett Wire Co 1125 Main St Pawtucket RI (1-6-10-17-18)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (2-6-10-14-19-21)
 National-Standard Co 601 N 8th St Niles Mich (16-17-19)
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (11)
 New England Electrical Works Inc 365 Main St Lisbon NH (10-13-19-25-39)
 Nichols Wire & Aluminum Co 1725 Rockingham Rd Davenport Iowa (26)
 Normandy Electric Wire Corp 125 Second St Brooklyn 31 NY (14)
 Okonite Co Passaic NJ (1-5-6-7-8-9-12 thru 21)
 Olin Conductors Metals Div P O Box 989 Chattanooga Tenn (17)
 Page Steel & Wire Div American Chain & Cable Co Inc P O Box 692 Monessen Pa (23)
 Phalo Plastics Corp 530 Boston Turnpike Shrewsbury Mass (2-6-8-19)
 Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (1-2-3-5-6-8 thru 19-21-25-29 thru 33-35-36-37-38)
 Philadelphia Insulated Wire Co 333 New Albany Rd Moorestown NJ (6-7-8-9-22-28)
 Plastic Wire & Cable Corp E Main St Jewett City Conn (2-3-6-9-19-20-22-28 thru 33-36-37-38)
 Plastoid Corp 42-61 24th St LIC 1 NY (2-6-9-12-19-20)
 Radix Wire Co 26260 Lakeland Blvd Cleveland 32 Ohio (2-3-6-7-10-11-12-19-20-32-34)
 Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (7-24)
 Reynolds Metals Co Richmond 18 Va (1-3-5-6-7-8-10-11-13 thru 21-27-28-30-31-32-33-35 thru 38)
 Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI (2-11-12-19-28-29)
 Rockbestos Wire & Cable Co Nicoll and Canner Sts New Haven 4 Conn (1-2-6-7-22-25-29-36)
 ●ROME CABLE DIV OF ALCOA 421 Ridge St Rome NY (1-2-3-6-8-10-12 thru 21-29-31-33 thru 38)—ADV PG 113
 Royal Electric Corp 95 Grand Ave Pawtucket RI (2-4-6-9-11-12-19-20-22-23-28-29-36)

Seeger-Williams Inc 4 Norman St Bridgeport 5 Conn (22)
 Sequoia Wire & Cable Co 2201 Bay Rd (P O Box 1007) Redwood City Calif (2-6-19-20)
 Simplex Wire & Cable Co 79 Sidney St Cambridge 39 Mass (1-5-6-8-15-16-19-21-31-35 thru 38)
 Sittler Corp 18 N Ada St Chicago 7 Ill (10-19)
 South River Metal Products Co Inc 377 Turnpike South River NJ (10-25)
 Southwire Co Carrollton Ga (3-6-10-17-19)
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (2-11-12)
 Surprenant Mfg Co 199 Washington St Boston 8 Mass (2-6-19)
 Telcon Inc P O Box 216 Pacific Palisades Calif (19-21)
 Tensolite Insulated Wire Co Inc West Main St Tarrytown NY (2-6-13-19)
 Tevco Insulated Wire 108 E Prospect Ave Burbank Calif (19)
 Times Wire & Cable Div International Silver Co Wallingford Conn (6-19-21-25)
 Titchener (E H) & Co 67 Clinton St Binghamton NY (10)
 Triangle Conduit & Cable Co Inc Triangle & Jersey Aves New Brunswick NJ (1-2-6-15-17-18-21-29-31-32)
 Victor Electric Wire & Cable Corp 618 Main St West Warwick RI (2-6-12-19-28)
 Walker Brothers P O Box 33 Conshohocken Pa (6-18-19)
 Watteredge Co 19629 West Lake Rd Rocky River 16 Ohio (24)
 Weircraft Inc 555 N Michigan St Lakeville Ind (2-6-11-14-19-21-22-25)
 Western Insulated Wire Co 2425 E 30th St Los Angeles 58 Calif (2-4-6-8-10-15-17-18-20-38)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1 thru 21)—ADV PG 2nd cover
 Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (25)
 Whitney Blake Co 102 Pershing St New Haven 14 Conn (6-10-12-16-19-38)

6E. PORTABLE CORD SETS

1. Extension
2. Molded integral
3. Range & dryer
4. Self-coiling & retractable
5. Appliance
6. Remote control
7. Extension cord reels
8. Static discharge grounding reels

Includes sets with appropriate connecting bodies at both ends. For cords with lamps attached, see "Trouble Lamps" in index. For cord without connectors, see "Cord"

A K Electric Corp 231 Front St Brooklyn 1 NY (1-5)
 Accurate Insulated Wire Corp 25 Fox St New Haven 13 Conn (1-2-3-4)
 Acorn Insulated Wire Co 36 Freeman St Pawtucket RI (1-3)
 Aero-Motive Mfg Co 1803 Alcott St Kalamazoo 24 Mich (7-8)
 Alpha Wire Corp 200 Varick St New York 14 NY (1-4)
 American Electric Cable Co 181 Appleton St Holyoke Mass (1)
 Anacanda Wire & Cable Co 25 Broadway New York 4 NY (1)
 Apex Wire & Cable Corp 237 37th St Brooklyn 32 NY (1-2)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (7)
 Associated Engineering Corp 65 Kent St Brookline 46 Mass (1-2)
 Beckley Electric Co Inc 468-470 Grand Ave Brooklyn 38 NY (1-2)
 Belden Mfg Co P O Box 5070A Chicago 80 Ill (1-2-3)
 Bell Electric Co 1844-50 W 21 St Chicago 8 Ill (1)
 Benjamin Reel Products Inc 10700 Broadway Cleveland 25 Ohio (1-7-8)
 Black (M) Mfg Co 300-08 N Third St Phila 6 Pa (1)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (1-3-5)
 Capitol Stage Lighting Co Inc 527 W 45 St New York 36 NY (1)
 Carol Cable Co 190 Middle St Pawtucket RI (1-3-5)
 Circle F Mfg Co 720 Monmouth St Trenton 4 NJ (3)
 Cordomatic Corp 1724 W Indiana Ave Philadelphia 32 Pa (1-4-7-8)
 Cornish Wire Co 50 Church St New York 17 NY (1-3)
 Diamond Wire & Cable Co 445 Park Ave Sycamore Ill (1-2-3-4)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-2-3-5)

Eastern Insulated Wire Corp Trenton NJ (2-5)
 Electrical Cord Mfg Co Inc 2554-2568 E 18 St Brooklyn 35 NY (5)
 Electric Cords & Supply Corp 413 E 3rd St Los Angeles 13 Calif (1-2-5-6)
 Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (1-2-7-8)
 Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (3)
 Faraday Inc 2011 W Beecher Rd Adrian Mich (2)
 Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (1)
 General Cable Corp 730 Third Ave New York 17 NY (1 thru 5)
 General Electric Co Wire & Cable Dept 1285 Boston Ave Bridgeport 2 Conn (1-3)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1-2-3-5-7)
 General Industries Inc 34529 Ford Rd Garden City Mich (1-2-5)
 General Insulated Wire Works 69 Gordon Ave Providence 5 RI (1-2-4)
 Haft & Sons Inc 950 Kent Ave Brooklyn 5 NY (1)
 Hykon Mfg Co 163 E State St (P O Box 923 EP) Alliance Ohio (7)
 Industrial Electric Reels Inc 1509 Chicago St Omaha 2 Neb (7)
 Kaiser Aluminum & Chemical Sales Inc Kaiser Center 300 Lakeside Dr Oakland 12 Calif (2)
 Koiled Kords Inc Box K Hamden Conn (4)
 Midwest Electric Products Inc 1515 N Front St Mankato Minn (3)
 Miller Electric Co 120 Main St Pawtucket RI (1 thru 6)
 Murray (O A) Co Inc 632 N Mill St Tipton Ind (1-2)
 National Tool & Mfg Co 100 N 12 St Kenilworth NJ (1-3)
 Pacific Electriccord Co 747 W Redondo Beach Blvd Gardena Calif (1-2-4-5-7)
 Pass & Seymour Inc Syracuse 9 NY (3)
 Phalo Plastics Corp 530 Boston Turnpike Shrewsbury Mass (1-2-3)
 Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (1)
 Plastic Wire & Cable Corp E Main St Jewett City Conn (1 thru 5)
 Rhode Island Insulated Wire Co Inc 50 Burnham Ave Cranston RI (1)
 Riverside Mfg & Electrical Supply Co 10228 Michigan Ave Dearborn Mich (2)
 Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (1-3-5)
 Royal Electric Corp 95 Grand Ave Pawtucket RI (1-3)
 Seeger-Williams Inc 4 Norman St Bridgeport 5 Conn (2)
 Standard Portable Cord Co Inc Mayville NY (1)
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (1-3)
 Triboro Electric Corp 110 Waterberry Brooklyn 6 NY (1)
 Victor Electric Wire & Cable Corp 618 Main St West Warwick RI (2)
 Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (1-2-3-5-6)
 Whitney Blake Co 102 Pershing St New Haven 14 Conn (1-2-4-5)
 Wilcox (M J) Co 823 Locust Pittsburgh 19 Pa (3)
 Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (1-7)

6F. CONNECTING & TERMINATING DEVICES

1. Connectors—pressure
3. End seals
4. Lugs & terminals
5. Potheads
6. Splices, kits & equipment
7. Terminal blocks & binding posts
8. Screw-on wire connectors
9. Collecting rings, shoes & devices
10. Ground clamps
11. Welding cable connectors
12. Lifting magnet connectors
13. Environment-resistant connectors
14. Tube-to-cable connectors
15. Temporary power connectors
16. Power connectors, self-grounding
17. Split-tinned connectors
18. Lead splicing sleeves

Accessories used for splicing, terminating, or connecting wire and cable to equipment or fittings.

AMP Inc Eisenhower Blvd Harrisburg Pa (1-4-6)
 APM-Hexseal Corp 41 Honeck St Englewood NJ (16)
 Adalet Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (3-5)
 Allen-Bradley Co 136 W Greenfield Ave Milwaukee 4 Wis (7)
 Allied Industries Inc P O Box 119 Ogallala Neb (3)

Anaconda Wire & Cable Co 25 Broadway New York 4 NY (5-6)
 Anderson (Albert & J M) Mfg Co 289 A St Boston 10 Mass (11-15)
 ●ANDERSON ELECTRIC CORP P O Drawer 2151 Birmingham 1 Ala (1-3-4-6-10)—ADV PG 79
 Anthony (F M) Co 773 University Ave Berkeley 10 Calif (1-4-6)
 ●BISHOP MFG CORP 10 Canfield Rd Cedar Grove NJ (6)—ADV PG 120
 Blackburn (Jasper) Corp 1525 Woodson Rd St Louis 14 Mo (1-4-10)
 Blackhawk Industries 250 S Main St Dubuque Iowa (10)
 Blaco Mfg Co 6541 Euclid Ave Cleveland 3 Ohio (10)
 Boggs (Harold L) & Co 34 N Gore Ave St Louis 19 Mo (1-4-10)
 Bridgeport Fittings Inc 209 Center St Bridgeport 2 Conn (10-14)
 ●BUCHANAN ELECTRICAL PRODUCTS CORP 434 U S Route 22 Hillside NJ (1-4-6-7)—ADV PG 94
 Burndy Corp Norwalk Conn (1-4-6-7-10)
 C & S Products Co Windsor Locks Conn (6)
 Cam-Lok Div Empire Products Inc 9213 Blue Ash Rd Cincinnati 42 Ohio (1-4-6-11-12-15)
 Camblock Corp 825 Bronx River Ave New York 72 NY (7)
 Carol Cable Co 190 Middle St Pawtucket RI (1-4)
 Central Porcelain Co 507 Railroad St Columbiana Ohio (1-8)
 Crouse-Hinds Co Syracuse 1 NY (13)
 Curtis Development & Mfg Co 3244 N 33 St Milwaukee 16 Wis (7)
 Dante Electric Mfg Co Bantam Conn (1-4)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (1-3-4-5-9)
 Division Lead Co 7742 W 61st Place Summit Ill (18)
 Dolco Mfg Co 2350 Curry St Long Beach 5 Calif (10)
 Dossier Mfg Corp 249-255 Huron St Brooklyn 22 NY (1-4-6-10-11-14-15-16-17)
 ETC Inc 990 E 67 St Cleveland 3 Ohio (1-4-6)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-8-10)
 Earl (H W) & Co 6225 S W 8th St Miami 44 Fla (11-12)
 Earl Electric Mfg Corp 35-20 Borden Ave Long Island City NY (4)
 Eastern Specialty Co 3617 N 8th St Phila 40 Pa (7)
 Elliott Electric Mfg Corp 50-30 98th St Corona 68 NY (1-3-4-6-8)
 Emerson Plastics Corp 1383 Seabury Ave Bronx 61 NY (7)
 Epoxylite Corp 1428 N Tyler Ave South El Monte Calif (6)
 Erico Products Inc 2070 E 61 Pl Cleveland 3 Ohio (1-4-11)
 Esco Mfg Co P O Box 1039 Greenville Texas (5)
 Fargo Mfg Co Inc 845 Main St Poughkeepsie NY (1)
 Fouché Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore (1-4-5)
 Frankel Connector Co 27 Vestry St NY 13 NY (1-4)
 G & W Electric Specialty Co 3500 W 127 St Blue Island Ill (3-5-6)
 Gemco Electric Co 25685 W Eight Mile Rd Detroit 40 Mich (7)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (4-7)
 General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (1-4)
 General Products Corp 107 Salem St Union Springs NY (1-7)
 Green (R H) Inc 1201 24th St Oakland 7 Calif (10)
 Hessel (N F) Co Inc 74 Beekman St NY 38 NY (7-11-15)
 Hi-Scale Products Corp 132 W 22nd St NY 11 NY (1)
 Hoffman Engineering Corp 1050 Tyler St Anoka Minn (15)
 Hollingsworth Co Solderless Terminal Div Box 430 Phoenixville Pa (1)
 Holub Industries Inc 442 Elm St Sycamore Ill (1-8)
 ●IDEAL INDUSTRIES INC 5136 Park Ave Sycamore Ill (1-8)—ADV PG 92
 Ilco Corp 4730 Madison Rd Cincinnati 27 Ohio (1-7)
 Industrial Electric Reals Inc 1509 Chicago St Omaha 2 Neb (9)
 Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (1)
 Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio (1-6-7-11-12-13-15-16)
 Joy Mfg Co H W Oliver Bldg Pittsburgh 22 Pa (1-5-6)
 Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo (1)
 Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (1-4-7)
 Kortick Mfg Co 5600 Third St San Francisco 24 Calif (10)
 Krueger & Hudepohl Inc 1041 Evans St Cincinnati 4 Ohio (1-4)
 Kulka Electric Corp 633 S Fulton Ave Mount Vernon NY (1-4-7)
 Lightning Rod Supply Co Shelton Conn (10)

Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-6)
 M & W Electric Mfg Co Inc S Walnut St (P O Box 350) East Palestine Ohio (10)
 Marathon Special Products Corp 12th & Cranberry Sts Erie Pa (7)
 Marshall (John) Associates Inc Box 2463 Bridgeport 8 Conn (1)
 Memco Engineering & Mfg Co Inc Commack LI NY (4-14)
 Mend-It Sleeve Mfg Co 3125 Gloria Terrace Lafayette Calif (1)
 Mercury Products Inc Boston Post Rd Guilford Conn (1-4-10)
 Metalectrics Inc 627 Greenwich St New York 14 NY (1-8)
 Midwest Electric Mfg Co 1639 Walnut St Chicago 12 Ill (10)
 Minnesota Mining and Mfg Co Electrical Products Div 900 Bush Ave St Paul 6 Minn (1-6)
 National Electric Dynamics Corp 4917 St Elmo Ave Bethesda 14 Md (1)
 National Tel-Tronics Corp 52 St Casimir Ave Yonkers NY (4-7)
 ●O Z ELECTRIC MFG CO INC 262 Bond St Brooklyn 17 NY (1-4-10-14)—ADV PG 100
 Ohio Brass Co 380 N Main St Mansfield Ohio (5)
 Okonite Co Passaic NJ (6)
 ●PLM PRODUCTS INC 3871 W 150 St Cleveland 11 Ohio (5-6)—ADV PG 114
 Pekcu Co 1227 McDonald Ave Brooklyn 30 NY (17)
 Penn-Union Electric Corp 315 State St Erie Pa (1-4-6-7-10-14)
 Porcelain Products Co 224 N Patterson St Carey Ohio (1-10)
 Powercraft Corp 2215 De Kalb St St Louis 4 Mo (1)
 Prefomed Line Products Co 5349 St Clair Ave Cleveland 3 Ohio (6)
 Rattan Mfg Co 10 Wall St (P O Box 1745) New Haven 7 Conn (1-10-17)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (3)
 Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (11)
 Richards Mfg Co Ltd 152 Coit St Irvington NJ (1-4-6)
 Ringsdorf Carbon Corp Box 22 McKeesport Pa (9)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (1-4-5-6)
 Sherman (H B) Mfg Co 22 Barney Battle Creek Mich (1-4)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (7)
 Southern Electrical Equipment Co 308 W Bland at Mint St Charlotte 3 NC (1)
 Square D Co Executive Plaza Park Ridge Ill (4-7)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (7)
 Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (8)
 States Co 19 E New Park Ave Hartford 6 Conn (7)
 Superior Electric Co 383 Middle St Bristol Conn (7)
 Surprenant Mfg Co 199 Washington St Boston 8 Mass (3)
 Suttle Equipment Corp 135 S LaSalle St Chicago 3 Ill (7)
 Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (1-4-6-7-8-10)
 Unimatic Corp Sherwood Lane Caldwell NJ (1)
 Vaco Products Co 317 E Ontario St Chicago 11 Ill (7)
 Wama Co Industrial Bldg Baltimore 2 Md (7)
 Watteredge Co 19629 West Lake Rd Rocky River 16 Ohio (4)
 ●WEAVER (J A) Co 2110 Howard St St Louis 6 Mo (1-10)—ADV PG 126
 Weicraft Inc 555 N Michigan St Lakeville Ind (3)
 Yorkville Metal Products Co 627 Greenwich St New York 14 NY (1-8)

66. CONDUCTOR SUPPORTS

1. Bushing insulators & wireholders
2. Open wiring cleats, knobs & tubes
3. Hangers & grips
4. Racks, framing & ladders
5. Staples, clamps, clips & straps
6. Trays
7. Troughs
8. Drive & bridle rings
9. Cable ties
10. Cable spacers

Accessories for holding wire and cable in place from source to load. See also "Raceways."

Acme Steel Co 135th St & Perry Ave Chicago 27 Ill (4)
 Adalef Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (1)
 Allen-Stevens Conduit Fittings Corp 33-53 62nd St Woodside 77 NY (5)

Anderson Electric Corp P O Drawer 2151 Birmingham 1 Ala (5)
 Arrow Fastener Co Inc 1 Junius St Brooklyn 12 NY (5)
 Atlas Tack Corp Pleasant & South Sts Fairhaven Mass (5)
 Bay-Tronic Co 43 Evergreen St Bayonne NJ (10)
 Blackhawk Industries 250 S Main St Dubuque Iowa (1)
 Bridgeport Fittings Inc 209 Center St Bridgeport 2 Conn (11)
 Buchanan Electrical Products Corp 434 U S Route 22 Hillside NJ (5)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (5)
 Central Porcelain Co 507 Railroad St Columbiana Ohio (2)
 ●CHALFANT PRODUCTS CO INC 11525 Madison Ave Cleveland 2 Ohio (4-6-7)—ADV PG 96
 Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa (4-6-7)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (2-3-6-7)
 Dolco Mfg Co 2350 Curry St Long Beach 5 Calif (10)
 ●EFFICIENCY ELECTRICAL & MFG CO Park Ave Ext P O Box 30 East Palestine Ohio (1-2-4)—ADV PG 122, 124
 Electrovert Inc 240 Madison Ave New York 16 NY (5-9)
 Eliza Metal Products Co Box 408 Birdgeville Pa (7)
 Elliott Electric Mfg Corp 50-30 98th St Corona 68 NY (1)
 Emerson Apparatus Co 171 Tremont St Melrose Mass (5)
 Emerson Plastics Corporation 1383 Seabury Ave Bronx 61 NY (11)
 Erico Products Inc 2070 E 61 Pl Cleveland 3 Ohio (5)
 Fastway Fasteners Inc 2157 E 28 St Lorain Ohio (8)
 Fletcher Mfg Co Box 246 Englewood Ohio (4-5)
 Fullman Mfg Co 1209-1215 Jefferson St Latrobe Pa (5)
 G-C Electronics Co 400 S Wyman St Rockford Ill (5)
 General Metals Inc 858 Goldsboro Greensboro NC (7)
 Glastic Corp 4321 Glenridge Rd Cleveland 21 Ohio (1)
 Green (R H) Inc 1201 24th St Oakland 7 Calif (5)
 Hall (William H) Co Windsor Locks Conn (3-5)
 Handy Angle Div Lug-A-Li Co 355 Lancaster Ave Haverford Pa (4)
 Heller Roberts Instruments Corp Industrial Fastener Div 700 Jamaica Ave Brooklyn 8 NY (1)
 Hendrix Wire & Cable Corp Milford NH (10)
 Heyman Mfg Co Kenilworth 20 NJ (11)
 Hoffman Engineering Corp 1050 Tyler St Anoka Minn (7)
 Holub Industries Inc 442 Elm St Sycamore Ill (5)
 Husky Products Inc 5300 Vine St Cincinnati 17 Ohio (3-4-5-6-7)
 John-Mamville 22 E 40 St New York 16 NY (6)
 Jordan Industries Inc 3030 N W 79 St Miami 47 Fla (5)
 Joslyn Mfg & Supply Co 3700 S Morgan St Chicago 9 Ill (1)
 Kellems Co Inc 15 Williams St Stonington Conn (3)
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich (7)
 Knox Porcelain Corp 2706 Mynders Ave (P O Box 2031) Knoxville 1 Tenn (2)
 Liebfried (H) Mfg Corp 95-101 Guernsey St Brooklyn 22 NY (3-4)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (4)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (2)
 M & W Electric Mfg Co Inc S Walnut St (P O Box 350) East Palestine Ohio (4)
 M & T Welding Products Corp 703 37th Ave Oakland Calif (4)
 Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (5-8)
 Maryland Lava Co Box 127 Bel Air Md (1)
 Merwin Mfg Co 19th & German Sts Erie Pa (5)
 Metalectrics Inc 627 Greenwich St New York 14 NY (1)
 Midwest Electric Mfg Co 1639 Walnut St Chicago 12 Ill (5)
 Mineralac Electric Co 25 N Peoria St Chicago 7 Ill (1)
 Network Industries Inc P O Box 397 Bayonne NJ (10)
 ●O Z ELECTRIC MFG CO INC 262 Bond St Brooklyn 17 NY (1)—ADV PG 100
 Olin Conductors Metals Div P O Box 989 Chattanooga Tenn (10)
 Oliver Electrical Mfg Co P O Box 217 Battle Creek Mich (1)
 PLM Products Inc 3871 W 150 St Cleveland 11 Ohio (10)
 ●P-W INDUSTRIES INC 11200 Roosevelt Blvd Philadelphia 15 Pa (4-7)—ADV PG 116
 Paine Co 6 Westgate Rd Addison Ill (5)
 Porcelain Products Co 224 N Patterson St Carey Ohio (2)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (3-4-5)
 Prefomed Line Products Co 5349 St Clair Ave Cleveland 3 Ohio (10)
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky (7)

Ralco Mfg Co 123-141 N Albany Ave Chicago 12 Ill (3)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (1)
 Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (2)
 Rome Cable Div of Alcoa 421 Ridge St Rome NY (10)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (5)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (1)
 Seeger-Williams Inc 4 Norman St Bridgeport 5 Conn (5)
 Spring City Electrical Mfg Co Spring City 85 Pa (1)
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (1-2-3-4-5)
 Superior Porcelain Co 931 1/2 Market St Parkersburg W Va (1-2)
 Superior Staple Mfg Co 40 Commercial St Fitchburg Mass (5)
 TA Mfg Corp 4607 Alger St Los Angeles 39 Calif (1)
 ● **THIEL TOOL & ENGINEERING CO 1417 N Market St St Louis 6 Mo (5)—ADV PG 125**
 Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (1-5-9)
 Titchener (E H) & Co 67 Clinton St Binghamton NY (5)
 Unistrut Products Co 933 Washington Blvd Chicago 7 Ill (4)
 Wadsworth Electric Mfg Co Inc 20-34 W 11 St (Box 272) Covington Ky (7)

Hussey (CG) & Co 2850 Second Ave Pittsburgh 19 Pa (1)
 Leonard Electric Mfg Co 3907 Perkins Ave Cleveland 14 Ohio
 Memco Engineering & Mfg Co Inc Commack LI NY (1-3)
 ● **O Z ELECTRICAL MFG CO INC 262 Bond St Brooklyn 17 NY (1)—ADV PG 100**
 Penn-Union Electric Corp 315 State St Erie Pa (1)
 Phelps Dodge Copper Products Corp 300 Park Ave New York 22 NY (1)
 Powercraft Corp 2215 De Kalb St St Louis 4 Mo (1-3)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (1-2)
 Revere Copper & Brass Inc 230 Park Ave NY 17 NY (1)
 Reynolds Metals Co Richmond 18 Va (3)
 Rome Cable Div of Alcoa 421 Ridge St Rome NY (1)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (1)
 Southern Electrical Equipment Co 308 W Bland at Mint St Charlotte 3 NC (1)
 Young Electric & Mfg Co Inc 2134 Curtis Denver 2 Colo (1)

- 6-6 Railroad Cables; 12p (Ansonia)
- 6-7 Terminal Blocks, Connectors and Fittings; 20p; Cat. No. G-101 (Buchanan)
- 6-8 Pres-Sure-Tips Splice Caps; 34p; Cat. No. T4 (Buchanan)
- 6-9 Terminal Blocks, Connectors & Fittings; 20p; Cat. No. G101 (Buchanan)
- 6-10 Power Cables; 16p (Crescent)
- 6-11 Interlocked Armor Power Cable; 12p; Cat. No. E5-106 (Crescent)
- 6-12 Hyvolt Power Cable; 16p (Crescent)
- 6-13 Interlocked Armor Power Cable; 12p (Crescent)
- 6-14 Connectors; 100p; Cat. No. 53 (Dossert)
- 6-15 Wire and Cables for Aircraft Missiles; 21p (Lewis Engineering)
- 6-16 Wire and Cable; 34p (New England Electrical)
- 6-17 Telephone Cables; Cat. No. 3003 (Okonite)
- 6-18 Flexible Cords; Cat. No. 2153 (Okonite)
- 6-19 Non-Destructive Cable Testing; Cat. No. 1148 (Okonite)
- 6-20 Self-Contained Cable System; Cat. No. 1149 (Okonite)
- 6-21 Industrial Wire; Cat. No. 2152 (Okonite)
- 6-22 Underground Residential Cable (Okonite)
- 6-23 Ken-Tel Paper Insulated Cables; 26p; Cat. No. 3003 (Okonite)
- 6-24 Underground Residential Cable; 8p; Cat. No. 1144 (Okonite)
- 6-25 Terminals, Lugs & Connectors; 70p; Cat. No. CT1-196 (Thomas & Betts)
- 6-26 Raceway Fittings; 60p; Cat. No. F17-155 (Thomas & Betts)
- 6-27 Wire & Cable; 35p; Cat. No. W-261 (Walker Brothers)
- 6-28 Wire and Cable; 5p; Cat. No. WC-859 (Walker Brothers)

6H. MISCELLANEOUS CONDUCTORS

1. Busbar & supports, copper
2. Crane rails
3. Busbar & supports, aluminum

Aluminum Co of America 1501 Alcoa Bldg Pittsburgh 19 Pa (1)
 Anderson Electric Corp P O Drawer 2151 Birmingham 1 Ala (1)
 Bundy Corp Norwalk Conn (1)
 Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn (1)
 Dossert Mfg Corp 249-255 Huron St Brooklyn 22 NY (1)
 Electric Materials Co Box 390 North East Pa (1)
 Erico Products Inc 2070 E 61 Pl Cleveland 3 Ohio (1)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers on the Free Information cards elsewhere in this issue.*

*Code No.	Description, Pages Catalog No. & Mfr.
6-1	Electronic Wire & Cable; 48p; Cat. No. 62 (Alpha Wire)
6-2	Submarine Cables; 12p (Ansonia)
6-3	Supervisory and Station Control Cables; 8p (Ansonia)
6-4	Telephone Cables; 10p (Ansonia)
6-5	Street Lighting Cables; 8p (Ansonia)

SECTION 7. RACEWAY AND FITTINGS

Raceway tools are listed in Section 12. Trays and troughs and other conductor supports are listed in Section 6.

7A. AUXILIARY GUTTERS

For increasing size of cabinets and panels to provide additional wiring room.

Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (1-2)
 Alwatt Mfg Co Inc 1706 Lapham Dr (P O Box 1171) Modesto Calif
 B & C Metal Stamping Co P O Box 2506 Station D Atlanta 18 Ga
 Burns (James F) Co 1601 Industrial Highway Pennsauken NJ
 Delta Metal Products Co 476 Flushing Ave Brooklyn 5 NY
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill
 Empire Metal Box Co Inc 68 Meserole St Brooklyn & NY
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore
 General Metals Inc 858 Goldsboro Greensboro NC
 Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif

Hoffman Engineering Corp 1050 Tyler St Anoka Minn
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich
 Lee Products Co 3 Garvey St Everett 49 Mass
 Leonard Electric Mfg Co 3907 Perkins Ave Cleveland 14 Ohio
 Lexington Electric Products Co Inc 12 Chapel St Newark 5 NJ
 McKinstry Metal Works Inc 285 McKinstry Ave Chicopee Mass
 Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 5 NY
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa
 Parker Electrical Mfg Co 221 Washington St Oakland 7 Calif
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky
 Square D Co Executive Plaza Park Ridge Ill
 Sun Electric Products Inc 28 S May St Orange NJ
 Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky
 ● **WESTINGHOUSE ELECTRICAL SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa—ADV PG 2nd Cover**
 Young Electric & Mfg Co Inc 2134 Curtis Denver 2 Colo
 Zinsco Electrical Products 729 Turner Los Angeles 12 Calif

2. Plug-in
3. Current-limiting
4. Trolley duct
5. Excitation
6. High frequency

Metal-enclosed busbars for exposed wiring installation. Trolley type incorporates bus or conductors accessible to sliding shoes or connectors for power feed.

Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (1-2)
 Calvert Co 19851 Ingersoll Dr Rocky River 16 Ohio (1)
 Continental Electric Equipment Co Box 1055 Cincinnati 1 Ohio (1-2)
 Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (1-2-6)
 Delta-Star Electric Div H K Porter Co Inc 2437 Fulton St Chicago 12 Ill (4)
 Empire Switchboard Co Inc 810 Fourth Ave Brooklyn 32 NY (1-2)
 ● **FEDERAL PACIFIC ELECTRIC CO 50 Paris St Newark 5 NJ (2-3-4)—ADV PG 74**
 Fedrail Corp 125 Barclay St New York 7 NY (4)
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore (1-2)
 General Electric Co Distribution Assemblies Dept 41 Woodford Ave Plainville Conn (1-2-3-4-6)
 ● **GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 4)—ADV PG 84-85**
 Insul-8-Corp 1369 Industrial Rd San Carlos Calif (1-2-4)
 I-T-E Circuit Breaker Co Bulldog Electric Products Div 7610 Jos Campau Detroit Mich (1-2-4)

7B. BUSWAY

1. Low-impedance feeder

Lexington Electric Products Co Inc 12 Chapel St
Newark 5 NJ (1)
Metropolitan Electric Mfg Co 2250 Steinway St
Long Island City 5 NY (1-2-3)
National Electric Div H K Porter Co Inc Porter
Bldg Pittsburgh 19 Pa (2)
Nelson Electric Mfg Co P O Box 5385 Tulsa
Okla (1)
Ringsdorf Carbon Corp Box 22 East McKeesport
Pa (4)
Square D Co Executive Plaza Park Ridge Ill
(1-2-3)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (5)
Westinghouse Electric Corp Standard Control Div
Beaver Pa (1-2-3-5-6)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gate-
way Center (Box 448) Pittsburgh 30 Pa (1
thru 6)—ADV PG 2nd Cover
Young Electric & Mfg Co Inc 2134 Curtis Denver
2 Colo (1)
Zinsco Electrical Products 729 Turner Los Angeles
12 Calif (1-2)

7C. CELLULAR FLOOR RACEWAY SYSTEMS

1. Metallic
3. Concrete
4. Complete adjustable floors

Systems which permit use of structural materials for enclosing electrical conductors.

Ceco Steel Products Corp 5601 W 26 St Chicago
50 Ill (1)
Conduffor Corp 13560 Lorain Ave (P O Box 2748)
Cleveland 11 Ohio (1-3)
General Electric Co Chemical & Metallurgical Div
Conduit Products Dept 980 Warren Ave Niles
Ohio (1)
Howard Electric Co 1950 Ruby St Melrose Park
Ill (1)
National Electric Div H K Porter Co Inc Porter
Bldg Pittsburgh 19 Pa (1)
Square D Co Executive Plaza Park Ridge Ill (1)
Unistrut Products Co 933 Washington Blvd Chi-
cago 7 Ill (4)
Walker Brothers P O Box 33 Conshohocken Pa
(1)
Wheatland Electric Products Co 500 Logan St
Carnegie Pa (1)

7D. CONDUIT & DUCT

1. Aluminum
2. Asbestos-cement
3. Clay
4. Fiber
5. Steel
6. Steel, plastic-coated
7. Wrought iron
8. Soapstone
9. Plastic
10. Alloy
11. Non-metallic (loom)
12. Fiberglass

For protection of conductors between source and load. For accessories, see "Conduit Fittings" in index.

Aluminum Co of America 1501 Alcoa Bldg Pitts-
burgh 19 Pa (1)
American Hard Rubber Co Ace Rd Butler NJ (9)
American Metal Moulding Co 146 Colt St Irving-
ton NJ (6)
Armco Div Armco Steel Corp Middletown Ohio
(5)
Brown Co 150 Causeway St Boston Mass (4)
Busada Mfg Corp 32-21 Downing St Flushing 54
NY (9)
Byers Co Clark Bldg Pittsburgh 30 Pa (7-9)
Carlson Products Corp P O Box 133 Aurora Ohio
(9)
Channel Master Corp Ellenville NY (1)
Chase Brass & Copper Co Chase Metals Service
Div 236 Grand St Waterbury 20 Conn (1-10)
Chesflex Corp 684 Nepperhan Ave Yonkers NY
(9)
Clifton Conduit Co 3300 Eastbourne Ave Balti-
more 24 Md (5)
Consolidated Pipe Co of America 1530 Commerce
Dr Stow Ohio (9)
Crescent Plastics Inc 955 Diamond Ave Evansville
7 Ind (9)
Electric Hose & Rubber Co 12th & Dure Sts Wil-
mington Dela (9)
General Electric Co Chemical & Metallurgical Div
Conduit Products Dept 980 Warren Ave Niles
Ohio (5-6)

●GENERAL ELECTRIC SUPPLY CO 1260 Boston
Ave Bridgeport Conn (1-2-4-5-6-9-10-11)—
ADV PG 84-85
●GOODRICH (B F) CHEMICAL CO 3135 Euclid Ave
Cleveland 15 Ohio (9)—ADV PG 76
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY (5)—ADV PG 2
Industrial Plastic Fittings Co 3891 W 150 St
Cleveland 11 Ohio (9)
Jasco Aluminum Products Corp 31 Nassau Terminal
Rd New Hyde Park NY (1)
Johns-Manville 22 E 40 St New York 16 NY (2)
Kaiser Aluminum & Chemical Sales Inc Kaiser
Center 300 Lakeside Dr Oakland 12 Calif (1)
Kraloy/Chemtrol Co Electrical Conduit Div 402
W Central Ave Santa Ana Calif (9)
Kyowa Fiber Pipe Co 1912 S First St Ironton
Ohio (4)
Laclede Steel Co Arcade Bldg St Louis 1 Mo (5)
Line Material Industries McGraw-Edison Co 700
W Michigan St Milwaukee Wis (4)
Mark (Clayton) & Co 1900 Dempster St Evanston
Ill (1-5)
Maryland Lava Co Box 127 Bel Air Md (8)
Nasco Corp 327 Fifth Ave Pittsburgh 22 Pa (3)
National Electric Div H K Porter Co Inc Porter
Bldg Pittsburgh 19 Pa (5)
Nikoh Tube Co 5000 S Whipple St Chicago 32
Ill (1-5-9)
Orangeburg Mfg Co 375 Park Ave New York 22
NY (4-9)
Perma-Pipe Corp P O Box 525 Middleboro Ky (9)
Pittsburgh Reflector Co Oliver Bldg Mellon
Square Pittsburgh 22 Pa (5)
Pittsburgh Standard Conduit Co James St Verona
Pa (1-5-6)
Plastiline Inc 1251 N E 48 St (P O Box 2023)
Pompano Beach Fla (9)
Republic Steel Corp Steel And Tubes Div 224 E
131 St Cleveland 8 Ohio (5-6-9)
Reynolds Metals Co Richmond 18 Va (1)
●ROME CABLE DIV OF ALCOA 421 Ridge St
Rome NY (1-5-9)—ADV PG 113
Silicone Insulation Inc 1383 Seabury Ave Bronx
61 NY (12)
Soapstone Duct Co 3985 Beach St Oakland Calif
(8)
Southwestern Plastic Pipe Co 5763-NQ Mineral
Wells Tex (9)
Stahlin Bros Inc Belding Mich (9-12)
Stauffer Chemical Co Molded Products Div 3211
E 26 St Los Angeles 23 Calif (9)
Steelduct Co Republic Steel Bldg Youngstown
Ohio (5)
Taylor Electric Inc 5835 Fischer Rd Howell
Mich (9)
Triangle Conduit & Cable Co Inc Triangle &
Jersey Aves New Brunswick NJ (1-4-5-9)
United States Rubber Co Naugatuck Chemical Div
946K Elm St Naugatuck Conn (9)
Walker Brothers P O Box 33 Conshohocken Pa
(1-5)
Western Plastics Corp 1515 W Second St Hasings
Neb (9)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gate-
way Center (Box 448) Pittsburgh 30 Pa (5-11)
—ADV PG 2nd Cover
Wheatland Electric Products Co 500 Logan St
Carnegie Pa (1-5-9)
Wiremold Co Hartford 10 Conn (11)
Youngstown Sheet and Tube Co P O Box 900
Youngstown 1 Ohio (5-10)

7E. CONDUIT & EMT FITTINGS

1. Connectors
2. Bushings, couplings & locknuts
3. Bushing adapters
4. Bodies & covers
5. Elbows & goosenecks
6. Pulling elbows & adapters
7. Expansion fittings
8. Gaskets
9. Hangers, straps, clamps & supports
10. Markers
11. Nipples & running thread
12. Seals, sealing plugs & compound
13. Service entrance masts, heads & fittings
14. Thread guards
15. Conduit ventilators
16. Deflection fittings
17. Enlargers
18. Plastic fittings
19. Flexible metallic conduit fittings
20. Aluminum fittings
21. Liquid-tight flexible conduit fittings
22. EMT fittings
23. Insulating bushings
24. Insulated bushings
25. Grounding bushings
26. Explosion-proof fittings

Accessories used to join, seal or terminate conduit and electric metallic tubing. See also "Boxes" in index.

A-1 Conduit Fittings Corp 144-31 91st Ave Ja-
maica 35 NY (1-2-3-4-13-17-18-19-22-23-24-
25)
Acme Mfg & Gasket Co 738 N 41 St Phila 4 Pa
(8)
Adaltec Mfg Co 14300 Lorain Ave Cleveland 11
Ohio (2-4-7-9-12-13-20-23)
●ALL-STEEL EQUIPMENT INC Aurora Ill (1-2-
13)—ADV PG 77
●ALLEN-STEVENS CONDUIT FITTINGS CORP 33-
53 62nd St Woodside 77 NY (1-2-3-7-11-
13-19)—ADV PG 98
Allmetal Engineering Inc 1003 S Date Ave Al-
hambra Calif (9)
Apex Bolt Products Co 452-458 N Claremont
Ave Chicago 12 Ill (9)
Appleton Electric Co 1701-59 Wellington Ave
Chicago 13 Ill (1-2-3-4-9-11-12-13)
Arrolcor Corp Foot of Bower St Montgomery Pa
(2-3-4-8)
Associated Manufacturers & Distributors Corp 5015
S E Haig St Portland 6 Ore (1-11)
Atlantic Conduit Fittings Co 450 Western Ave
Boston Mass (1-2-3-4-9-11-12-13-17)
Atlas Metal Industries 259 W 23 St Hialeah Fla
(9)
Badger Die Casting Corp 201 W Oklahoma Ave
Milwaukee 7 Wis (1)
Blackhawk Industries 250 S Main St Dubuque
Iowa (1-2-3-4-9-13-22-24-25)
Bowers Mfg Co Inc 6700 Avaton Blvd Los Angeles
3 Calif (9)
Brady (WH) Co 727 W Glendale Ave Milwaukee 9
Wis (10)
Bridgeport Fittings Inc 209 Center St Bridgeport
2 Conn (1 thru 6-8-9-13)
●BRIEGL METHOD TOOL CO 104 N E First St
Galva Ill (1-2)—ADV PG 86
Brown Company 150 Causeway St Boston 14
Mass (1-5-17)
Buchanan Electrical Products Corp 434 U S Route
22 Hillsdale NJ (2-24)
Channel Master Corp Ellenville NY (2-5)
Clifton Conduit Co 3300 Eastbourne Ave Balti-
more 24 Md (2-5-11)
Conduit Nipple Mfg Co 1455 Spring Garden Ave
Pittsburgh 12 Pa (2-5-11-20-22)
Conduit Pipe Products Co 157 W Fulton St Colum-
bus 16 Ohio (2-5-11-20)
Consolidated Pipe Co of America 1530 Commerce
Dr Stow Ohio (18)
Crescent Plastics Inc 955 Diamond Ave Evansville
7 Ind (18)
●CROUSE-HINDS CO Syracuse 1 NY (1 thru 9-12-
13)—ADV PG 4th cover
Crown Die Casting Corp 752 S Third Ave Mount
Vernon NY (1-2-4-5-6-13-18-19-20-22)
Curtee (W F) Mfg Co P O Box 776 Houston 1
Tex (1-4-5-6-8-19)
Diamond Expansion Bolt Co Inc 500 North Ave
Garwood NJ (9)
Dolco Mfg Co 2350 Curry St Long Beach 5
Calif (13)
Duro Fittings Co 2210 S Davie Ave Los Angeles
22 Calif (1-2-4-5-9-11-12-13-19)
Earl Electric Mfg Corp 35-20 Borden Ave Long
Island City NY (1-2-9)
●EFFICIENCY ELECTRIC & MFG CO Park Ave Ext
P O Box 30 East Palestine Ohio (9)—ADV PG
122, 124
Electrical Fittings Corp 123 Smith St East Farm-
ingdale NY (1-2-4-5-8-9-11-12-13-19 thru 25)
Electrical Tubular Products Inc 74-16 Grand Ave
Maspeth NY (1-2-11)
Electroline Mfg Co 2622 E 51st St Cleveland 4
Ohio (1-2-4-6-22-23)
Elliott Electric Mfg Corp 50-30 98th St Corona
66 NY (1 thru 9-11-12-13-14)
Elliott Electric Products Co 1513 Olmstead Ave
New York 62 NY (1-9-11-12-13-14)
Erico Products Inc 2070 E 61 Pl Cleveland 9
Ohio (9)
Fastway Fasteners Inc 2157 E 28 St Lorain Ohio
(9)
●FULLMAN MFG CO 1209-1215 Jefferson St La-
robe Pa (9)—ADV PG 112
Gateway Engineering Co 3233 W Grand Ave Chi-
cago 51 Ill (9)
Gator Electric Inc 5105 E 10 Ave Hialeah Fla
(2-9-22)
●GEDNEY ELECTRIC CO Americas Bldg Radio City
NY 20 NY (1 thru 6-8-9-11-12-13-14-17)—
ADV PG 111
General Cable Corp 730 Third Ave New York
17 NY (1-2-5-11-22)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston
Ave Bridgeport Conn (1 thru 25)—ADV PG
84-85
General Steel Fittings Co 1321 21st St Racine
Wis (2-11)
Gibbons Metal Products 730 Gibbons St Los An-
geles 31 Calif (1-2-5-9-11-12)
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY (1 thru 14)—ADV PG 2
Greene (R H) Inc 1201 24th St Oakland 7
Calif (2-9-12)
Grinnell Co Inc 260 W Exchange St Providence 2
RI (9)
Hallex Die Casting Co 8640 Bessemer Cleveland
27 Ohio (1-2-4-6-22)
Hall (William H) Co Windsor Locks Conn (9)
Holub Industries Inc 442 Elm St Sycamore Ill
(9)
●IDEAL INDUSTRIES INC 5136 Park Ave Sycam-
ore Ill (5-6-19-21)—ADV PG 92
Jasco Aluminum Products Corp 31 Nassau Terminal
Rd New Hyde Park NY (2-5)
Johns-Manville 22 E 40 St New York 16 NY (12)

Jordan Industries Inc 3030 N W 75 St Miami 47 Fla (12-14)
 Kaiser Aluminum & Chemical Sales Inc Kaiser Center 300 Lakeside Dr Oakland 12 Calif (5)
 Kees (F D) Mfg Co 700 Park Ave Beatrice Neb (2)
 Kellems Co Inc 15 Williams St Stonington Conn (21)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1 thru 5-8-12-13-17)
 Kandu Corp 1040 W 12 St Erie Pa (1-2-4-5-20)
 Korns (C C) Co P O Box 483 Johnston Va (9)
 Kralov/Chemtrol Co Electrical Conduit Div 402 W Central Ave Santa Ana Calif (18)
 Leibfried (C H) Mfg Corp 95-101 Guernsey St Brooklyn 22 NY (9)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (5-11-12)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (9-12-13)
 M & T Welding Products Corp 703 37th Ave Oakland Calif (13)
 ●M & W Electric Mfg Co Inc S Walnut St (P O Box 350) East Palestine Ohio (1-9-12-13-20)—ADV PG 118
 Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (2-9)
 Mark (Clayton) & Co 1900 Dempster St Evanston Ill (5)
 ●MASON (LE) CO 98 Business St (Hyde Park) Boston 36 Mass (4-5-8-13-20-22-26)—ADV PG 82
 ●McCAFFREY MFG & SUPPLY CO 1840 W 14 St Chicago 8 Ill (13)—ADV PG 120
 McKinley (Ben P) Co 522 S Clinton St Chicago 7 Ill (2)
 Merwin Mfg Co 19th & German Sts Erie Pa (9)
 Metalelectrics Inc 627 Greenwich St New York 14 NY (1 thru 5-9-11-12-13-17)
 Midwest Electric Mfg Co 1639 Walnut St Chicago 12 Ill (1-2-6-9-11-13-19-22-23-24-25)
 ●MINERALLAC ELECTRIC CO 25 N Peoria St Chicago 7 Ill (9)—ADV PG 103
 Misener Mfg Co Inc 202-208 Walton St Syracuse 2 NY (12)
 Multi-A-Frame Corp 6401 Epworth Blvd Detroit 10 Mich (9)
 Myers Electric Products Inc 3019 S Vail Ave Los Angeles 22 Calif (1)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-2-5)
 ●O Z ELECTRICAL MFG CO INC 262 Bond St Brooklyn 17 NY (2-7-12)—ADV PG 100
 ●PLUM PRODUCTS INC 3871 W 150 St Cleveland 11 Ohio (1-2-15)—ADV PG 114
 ●PAINE CO 6 Westgate Rd Addison Ill (9)—ADV PG 122
 Pipe Couplings Mfrs Inc P O Box 488 Martins Ferry Ohio (2-5-11)
 Pittsburgh Reflector Co Oliver Bldg Mellon Square Pittsburgh 22 Pa (9)
 Pittsburgh Standard Conduit Co James St Verona Pa (2-5-11-21)
 Plastiline Inc 1251 N E 48 St (P O Box 2023) Pompano Beach Fla (14)
 Porcelain Products Co 224 N Patterson St Carey Ohio (13)
 ●POWER-STRUT DIV VAN HUFFEL TUBE CORP Dietz Rd Warren Ohio (9)—ADV PG 101
 Product Electric Corp 932 Rogers Pl New York 59 NY (1-2-4-6 thru 9-12-13-18-19-22-23-24-25)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (1-2-3-4-5-9-12-13)
 Ramco Mfg Co 540 Westfield Ave W Roselle Park NJ (9)
 Rattan Mfg Co 10 Wall St (P O Box 1745) New Haven 7 Conn (1-2-5-6-9-11-13-20-22-23-24-25)
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ (8)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (2-12)
 Republic Steel Corp Steel And Tubes Div 224 E 131 St Cleveland 8 Ohio (2-5-18)
 Reynolds Metals Co Richmond 18 Va (2-20)
 Richards (J R) Co P O Box 482 Carnegie Pa (1-2-9-11-12-13)
 Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (2)
 Roller (Wm G) Inc 159 Liberty Ave Mineola NY (1-2-11-12-13-17-19-22-23-25)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (9)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (5-12)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (8)
 Sioane Mfg Co 7606 N Clybourn Ave Sun Valley Calif (18)
 So-Cal Electro Products Inc 4423 W Jefferson Blvd Los Angeles 16 Calif (1)
 ●SPRING CITY ELECTRICAL MFG CO—Spring City 85 Pa (2-7-16-18)—ADV PG 114, 121
 ●STEEL CITY ELECTRICAL CO 1207 Columbus Ave Pittsburgh 33 Pa (1-2-3-6-9-13)—ADV PG 91
 Steel Electric Products Co Inc 5602 18th Ave Brooklyn 4 NY (1 thru 6-8-9-11-12-13-17)
 Steelduct Co Republic Steel Bldg Youngstown Ohio (2-5-11)
 TA Mfg Corp 4607 Alger St Los Angeles 39 Calif (9)
 Thepitt Mfg Co Gregg & Hammond Sts Carnegie Pa (2-3-9-11-12-13)
 ●THIEL TOOL & ENGINEERING CO 1417 N Market St St Louis 6 Mo (9)—ADV PG 125
 ●THOMAS & BETTS CO 36 Butler St Elizabeth 1 NJ (1-2-3-5-9-11-13-17-19-20-21-22-24-25)—ADV PG 81

Thompson Mfg Co 611 Stevedore St Geneva Ill (9)
 Tomic Sales & Engineering Co 20000 Sherwood Ave Detroit 34 Mich (1-2-19-22)
 Union Insulating Co Inc Box 351 Parkersburg W Va (23-24-25)
 Unistrut Products Co 933 Washington Blvd Chicago 7 Ill (9)
 Utility Service Co Inc 1620 13th St (P O Box 102) Racine Wis (13)
 V V Fitting Co P O Box 1253 Merchantville NJ (2-7-9-13)
 Victor Specialties Inc 775 Main St New Rochelle NY (9)
 Wagner Malleable Products Co 222 W Adams St Chicago 6 Ill (4)
 Walker Brothers End St Conshohocken Pa (2-5)
 ●WEAVER (J A) CO 2110 Howard St St Louis 6 Mo (1-2-5-9-13-23)—ADV PG 126
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1 thru 5-7 thru 14)—ADV PG 2nd cover
 Wheatland Electric Products Co 500 Logan St Carnegie Pa (18)
 Yorkville Metal Products Co 627 Greenwich St New York 14 NY (2-9-11-12-17)
 Youngstown Sheet and Tube Co P O Box 900 Youngstown 1 Ohio (2-5)

Ettco Wire & Cable Corp 75 Onderdonk Ave Brooklyn 37 NY (1)
 Flexonics Div Calumet & Hecla Inc 450 E Devon Ave Bartlett Ill (1-2)
 General Cable Corp 730 Third Ave New York 17 NY (1)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1)—ADV PG 2
 International Metal Hose Co 520 Goodrich Rd (P O Box 149) Bellevue Ohio (1-2)
 Kopex Div Gemmer Mfg Co 6400 Mt Elliott Ave Detroit Mich (1)
 Marco Industries 207 S Helena St (P O Box 110) Anaheim Calif (1)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1)
 Universal Metal Hose Co 2133 S Kedzie Ave Chicago 23 Ill (1-2)

7H. SURFACE RACEWAY

1. Metallic
2. Non-metallic
3. Ground wire moulding
4. Combination raceway & fixture support
5. Combination raceway & multi-outlet system
6. Overfloor duct

For extension of existing concealed wiring, or for complete installation where concealed wiring is unnecessary or impractical.

Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (1)
 General Metals Inc 858 Goldsboro Greensboro NC (1)
 Haley (R G) & Co Inc 767 Spitzer Toledo 4 Ohio (3)
 Hendrix Wire & Cable Corp Milford NH (3)
 Ideas Inc 214 Ivins Ave Laramie Wyo (2-5-6)
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich (1)
 Mitchell Moulding Co 1501 Circle Ave Forest Park Ill (3)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1-5)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (4-5)
 Saylor Electric Products Corp 277 Pierce St Birmingham Mich (2)
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (1-4)
 Versabar Corp 14 Whyte St Jersey City NJ (1)
 Wadsworth Electric Mfg Co Inc 20-34 W 11th St (Box 272) Covington Ky (1)
 ●WIREMOLD CO Hartford 10 Conn (1-5-6)—ADV PG 4

7K. UNDERFLOOR DUCT AND DISTRIBUTION SYSTEMS

For concealed passage of conductors beneath floor. For structurally-integrated systems, see "Cellular Floor Raceways."

Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa
 Gateway Engineering Co 3233 W Grand Ave Chicago 51 Ill
 General Electric Co Chemical & Metallurgical Div Conduit Products Dept 980 Warren Ave Niles Ohio
 Howard Electric Co 1950 Ruby St Melrose Park Ill
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa
 Orangeburg Mfg Co 375 Park Ave New York 22 NY
 Square D Co Executive Plaza Park Ridge Ill
 Walker Brothers P O Box 33 Conshohocken Pa
 Wheatland Electric Products Co 500 Logan St Carnegie Pa

7L. WIREWAY

Covered troughs for continuous enclosure of conductors.

7F. ELECTRICAL METALLIC TUBING

1. Steel
2. Steel, plastic coated
3. Aluminum

Lightweight conduit; frequently called "EMT" or "Thinwall."

Aluminum Co of America 1501 Alcoa Bldg Pittsburgh 19 Pa (3)
 Armco Div Armco Steel Corp Middletown Ohio (1)
 Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn (3)
 Circle Wire & Cable Corp 5500 Maspeth Ave Maspeth NY (1)
 Clifton Conduit Co 3300 Eastbourne Ave Baltimore 24 Md (1)
 Columbia Cable & Electric Corp 255 Chestnut St Brooklyn 8 NY (1)
 General Cable Corp 730 Third Ave New York 17 NY (1-3)
 General Electric Co Chemical & Metallurgical Div Conduit Products Dept 980 Warren Ave Niles Ohio (1-2)
 Laclede Steel Co Arcade Bldg St Louis 1 Mo (1)
 Mark (Clayton) & Co 1900 Dempster St Evanston Ill (1)
 National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa (1)
 Nikoh Tube Co 5000 S Whipple St Chicago 32 Ill (1)
 Pittsburgh Standard Conduit Co James St Verona Pa (1)
 Republic Steel Corp Steel and Tubes Div 224 E 131 St Cleveland 8 Ohio (1-2)
 Rome Cable Div of Alcoa 421 Ridge St Rome NY (1-3)
 Steelduct Co Republic Steel Bldg Youngstown Ohio (1)
 Triangle Conduit & Cable Co Inc Triangle & Jersey Aves New Brunswick NJ (1)
 Wheatland Electric Products Co 500 Logan St Carnegie Pa (1)
 Youngstown Sheet and Tube Co P O Box 900 Youngstown 1 Ohio (1)

7G. FLEXIBLE METALLIC CONDUIT

1. Standard
2. Liquid-tight

Spirally wound steel strip, interlocked to provide flexible enclosure for conductors.

American Flexible Conduit Co Inc 969 Shawmut Ave New Bedford Mass (1-2)
 American Metal Moulding Co 146 Coit St Irvington NJ (1-2)
 Anaconda Metal Hose Div Anaconda American Brass Co P O Box 791 Waterbury 20 Conn (1-2)
 Clifton Conduit Co 3300 Eastbourne Ave Baltimore 24 Md (1)
 Columbia Cable & Electric Corp 255 Chestnut St Brooklyn 8 NY (1-2)
 Electri-Flex Co Roselle Ill (2)

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CO. NAME		
OUR MAIN BUSINESS IS		
I am in charge of Electric Work <input type="checkbox"/> YES <input type="checkbox"/> NO		

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Alwalt Mfg Co Inc 1706 Lapham Dr (P O Box 1171) Modesto Calif
 B & G Metal Stamping Co P O Box 2506 Station B Atlanta 18 Ga
 Chalfant Products Co Inc 11525 Madison Ave Cleveland 2 Ohio
 Columbia Metal Products Co 260 E 143 St New York 51 NY
 Delta Metal Products Co 476 Flushing Ave Brooklyn 5 NY
 Electra Mfg Co Industrial Park Middletown NY
 Eliza Metal Products Co Box 408 Bridgeville Pa
 Empire Metal Box Co Inc 68 Meserole St Brooklyn 6 NY
 Federal Pacific Electric Co 50 Paris St Newark 5 NJ
 Fouch Electric Mfg Co Inc 2138 N Interstate Ave (P O Box 3978) Portland 8 Ore
 General Electric Co Distribution Assemblies Dept 41 Woodford Ave Plainville Conn
 General Metals Inc 858 Goldsboro Greensboro NC
 Gibbons Metal Products 730 Gibbons St Los Angeles 31 Calif
 ●HOFFMAN ENGINEERING CORP 1050 Tyler St Anoka Minn—ADV PG 110
 ●HUENEFFELD CO ENGINEERED PRODUCTS DIV 2701 Spring Grove Ave Cincinnati 25 Ohio—ADV PG 98
 Keystone Mfg Co 23328 Sherwood Rd Warren Mich
 Lee Products Co 3 Garvey St Everett 49 Mass
 Lexington Electric Products Co Inc 12 Chapel St Newark 5 NJ
 McKinstry Metal Works Inc 285 McKinstry Ave Chicago 5 Mass
 Mecod Metal Box & Panel Mfg Co Inc 2522 W Huntington St Phila 32 Pa
 Metropolitan Electric Mfg Co 2250 Steinway St Long Island City 5 NY

National Electric Div H K Porter Co Inc Porter Bldg Pittsburgh 19 Pa
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla
 P-W Industries Inc 11200 Roosevelt Blvd Philadelphia 15 Pa
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio
 Queen Products Co Inc Thirteenth & Rowan Sts Louisville 3 Ky
 Square D Co Executive Plaza Park Ridge Ill
 Taylor Electric Inc 5835 Fischer Rd Howell Mich
 Wiegmann (E M) & Co Inc Freeburg Ill

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
7-1	Explosion-proof Fittings; 20p; Cat. No. F260 (Adalet)
7-2	Electrical Fittings; 12p; Cat. No. 6159 (Allen-Stevens)

7-3	Conduit Fittings; 9p; Cat. No. 255-2 (Electrolite)
7-4	Steel-Enclosed 4- and 5-Pole Electrification Systems; 8p; Cat. No. 95 (Feedrail)
7-5	Busway Systems; 24p; Cat. No. GEA-6736 (GE Co.)
7-6	Copper Tubing Hangers; 9p; Cat. No. cth-56 (Grinnell)
7-7	Fittings; 39p; Cat. No. 50 (Kondu)
7-8	Conduit; 12p; Cat. No. 961 (Nikoh)
7-9	Line-Flax Cable Suspension System; 6p; Cat. No. 161-1 (Perfect-Line)
7-10	Surface Raceways and Electrical Supports; 24p; Cat. No. 10-1 (Power-Strut)
7-11	Conduit Fittings and Boxes; 72p (Richards)
7-12	Service Fittings; 20p; Cat. No. SF-1261 (Walker Brothers)
7-13	Underfloor Electrical Distribution; 63p; Cat. No. 761 (Walker Brothers)
7-14	Power Raceway; 15p; Cat. No. PR 161 (Walker Brothers)
7-15	Surface Raceways & Fittings; 152p; Cat. No. 22 (Wiremold)

SECTION 8. MOTORS AND GENERATORS

For flexible reference, motors are listed in four classifications: size, design, enclosure, and application.

8A. MOTORS—SIZE

1. Integral horsepower
2. Fractional horsepower
3. Sub-fractional (miniature)

Acro Switch Div Robertshaw-Fulton Controls Co 2040 E Main St Columbus 16 Ohio (3)
 Alliance Mfg Co Inc Lake Park Blvd Alliance Ohio (3)
 Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (1)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1)
 Baldor Electric Co 4353 Duncan Ave St Louis 10 Mo (1-2)
 Barber-Colman Co P O Drawer 99 Rockford Ill (2)
 Bodine Electric Co 2500 W Bradley Pl Chicago 18 Ill (2-3)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (1-2)
 Bristol Motor Div Vocaline Co of America Inc Coulter St Old Saybrook Conn (3)
 Brook Motor Corp 3302-4 W Peterson Ave Chicago 45 Ill (1-2)
 Carter Motor Co 2711 W George St Chicago 18 Ill (2-3)
 Century Electric Co 18th & Pine Sts St Louis 3 Mo (1-2)
 Chandeysson Electric Co 4084 Bingham Ave St Louis 16 Mo (1)
 Cleveland Electric Motor Co 5213 Chester Ave Cleveland 3 Ohio (1-2)
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ (1)
 Cramer Div Giannini Controls Corp Old Saybrook Conn (3)
 Cyclo-Freez Corp 6318 Cambridge Minneapolis 16 Minn (2)
 Dalmotor Co 1375 Clay St Santa Clara Calif (2-3)
 Dayton Electric Mfg Co 5959 Howard St Chicago 48 Ill (1-2)
 Delco Products Div General Motors Corp 329 E 1st St Dayton 1 Ohio (1-2)
 Dumore Co 1300 17th St Racine Wis (2)
 Electra Motors Inc 1110 N Lemon St Anaheim Calif (1-2)

Electric Indicator Co Inc Camp Ave Springdale Conn (2-3)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (1)
 Electric Motors & Specialties Inc King & Hamsher Sts Garrett Ind (2)
 Electro Dynamic Div General Dynamics Corp 163 Ave A Bayonne NJ (1-2)
 Elliott Co Jeannette Pa (1)
 Emerson Electric Mfg Co 8100 Florissant Ave St Louis 36 Mo (1-2)
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freeport Ill (1-2)
 Fasco Industries Inc Davis & Toppin Sts Rochester 2 NY (2)
 Franklin Electric Co Inc 400 E Spring St Bluffton Ind (1-2)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-3)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3)—ADV PG 84-85
 Gleason-Avery Inc 45 Aurelius Ave Auburn NY (3)
 Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio (2-3)
 Haft & Sons Inc 950 Kent Ave Brooklyn 5 NY (3)
 Hagen Mfg Co 104 Walnut St Baraboo Wis (3)
 Hansen Mfg Co Inc RR #1 Princeton Ind (3)
 Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (1)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (1)
 Haydon (A W) Co 232 N Elm St Waterbury Conn (3)
 Haydon Div General Time Corp 245 E Elm St Torrington Conn (3)
 Heinze Electric Co 685 Lawrence St Lowell Mass (3)
 Holtzer-Cabot Corp 125 Amory St Boston 19 Mass (2-3)
 Howard Industries Inc 1760 State St Racine Wis (2-3)
 Howell Electric Motors Co 409 N Roosevelt Howell Mich (1-2)
 IMC Magnetics Corp 570 Main St Westbury NY (2-3)
 Ideal Electric and Mfg Co East First St Mansfield Ohio (1)
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio (1)
 International Register Co 2620 W Washington Blvd Chicago 12 Ill (2)
 Jack & Heintz Div Siegler Corp P O Box 6719 Cleveland 1 Ohio (1-2)
 Janette Electric Mfg Co Lehigh at Main Sts Morton Grove Ill (1-2-3)
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio (1)
 Kingston Conley Inc Plainfield NJ (1-2)

Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis (1)
 Leland Electric Co 1501 Webster St Dayton 1 Ohio (1-2)
 Lewus Electric Co 1254 W Harrison St Chicago 7 Ill (1-2)
 Lima Electric Motor Co Inc Findlay Road Lima Ohio (1-2)
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (1)
 Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles 22 Calif (1-2)
 Marathon Electric Mfg Corp Wausau Wis (1-2)
 Marble Electric Corp Gladstone Mich (1)
 Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio (1-2)
 McWilliam Mfg Co 310 Broadway St Paul 1 Minn (2)
 Motor Specialty Inc 2801-17 Lathrop Ave Racine Wis (2)
 Motoresearch Co 1600 Junction Ave Racine Wis (1-2-3)
 Newman Electric Motors Inc 357 Wilson Ave Newark 5 NJ (1-2)
 Northwestern Electric Co 1750 N Springfield Ave Chicago 47 Ill (1-2)
 Peerless Electric Div H K Porter Co Inc 1401 W Market St Warren Ohio (1-2)
 Rae Motor Corp Box 518 McHenry Ill (2-3)
 Redmond Co Inc 201 Monroe St Owosso Mich (2)
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (1-2)
 Reuland Electric Co 3001 W Mission Rd Alhambra Calif (1-2)
 Reynolds Electric Co 3000 River Rd River Grove Ill (2)
 Robbins & Myers Inc 1345 Lagonda Ave Springfield Ohio (1-2-3)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (1)
 Sangamo Electric Co 11th & Converse Springfield Ill (3)
 Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ (1-2-3)
 Shelby Electric Inc East US Highway #421 Shelbyville Ind (1-2)
 Small Motors Inc 2076 Elston Ave Chicago 14 Ill (2-3)
 Standard Electric Div Standard Dayton Corp P O Box 1001 Dayton 1 Ohio (1-2)
 System Analyzer Corp 700 W State St Nokomis Ill (1)
 Thermador Electrical Mfg Co 5119 District Blvd Los Angeles 22 Calif (2)
 UPPCO Inc 900 S Desplaines St Chicago 7 Ill (2-3)
 United Electric & Engineering Co 8545 W 64 Pl Arvada Colo (1-2)

U S Electrical Motors Inc 200 E Slauson Ave
Los Angeles 54 Calif (1-2)
Universal Electric Co 300 E Main St Owosso
Mich (2-3)
Wagner Electric Corp 6400 Plymouth Ave St
Louis 33 Mo (1-2)
Western Gear Corp Electro Products Div 132 W
Colorado St Pasadena 1 Calif (2-3)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1-2)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gate-
way Center (Box 448) Pittsburgh 30 Pa (1-2)
—ADV PG 2nd cover

8B. MOTORS—DESIGN

1. Direct current
2. Polyphase induction
3. Polyphase synchronous
4. Single phase
5. High frequency
6. Wound rotor

Air-Marine Motors Inc East Bethpage Rd Plain-
view NY (1-4)
Allis (Louis) Co 427 East Stewart St Milwaukee
1 Wis (1 thru 4)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee
1 Wis (1-2-3-6)
Baldor Electric Co 4353 Duncan Ave St Louis 10
Mo (1-2-4)
Barber-Colman Co P O Drawer 99 Rockford Ill
(1-4)
Bodine Electric Co 2500 W Bradley Pl Chicago 18
Ill (1-2-3-4)
Bogue Electric Mfg Co 52 Iowa Ave Paterson 3
NJ (1-2-4)
Brook Motor Corp 3302-4 W Peterson Ave Chi-
cago 45 Ill (4-6)
Carter Motor Co 2711 W George St Chicago 18
Ill (1)
Century Electric Co 18th & Pine Sts St Louis 3
Mo (1-2-3-4-6)
Chandeysson Electric Co 4084 Bingham Ave St
Louis 16 Mo (1-2-3)
Cleveland Electric Motor Co 5213 Chester Ave
Cleveland 3 Ohio (2)
Columbia Electric Mfg Co 4519 Hamilton Ave
Cleveland 14 Ohio (3)
Continental Electric Co 1234 S Prairie Ave (P O
Box 895) Hawthorne Calif (5)
Continental Electric Co Inc 325 Ferry St Newark
5 NJ (1-2-3)
Cyclo-Freez Corp 6318 Cambridge Minneapolis 16
Minn (4)
Dalmator Co 1375 Clay St Santa Clara Calif
(1-4)
Dayton Electric Mfg Co 5959 W Howard St Chi-
cago 48 Ill (2-4)
Delco Products Div General Motors Corp 329 E
1st St Dayton 1 Ohio (1-2-4)
Dumore Co 1300 17th St Racine Wis (4)
Electra Motors Inc 1110 N Lemon St Anaheim
Calif (2-3-4)
Electric Indicator Co Inc Camp Ave Springdale
Conn (1 thru 6)
Electric Machinery Mfg Co 800 Central Ave Min-
neapolis 13 Minn (2-3-4-6)
Electric Motors & Specialties Inc King & Hamsher
Sts Garrett Ind (4)
Electric Products Co 1725 Clarkstone Rd Cleveland
12 Ohio (1-2-3)
Electro Dynamic Div General Dynamics Corp 163
Ave A Bayonne NJ (1-2)
Electronic Specialty Co 5121 San Fernando Rd
Los Angeles 39 Calif (1)
Elliott Co Jeannette Pa (1-2-3)
Emerson Electric Mfg Co 8100 Florissant Ave St
Louis 36 Mo (4)
Fairbanks Morse & Co Electrical Div 303 N Hen-
derson Freepoint Ill (1-2-3-4)
Fasco Industries Inc Davis & Toppin Sts Roch-
ester 2 NY (4)
Franklin Electric Co Inc 400 E Spring St Bluffton
Ind (1-2-4)
General Electric Co Industrial Sales Operation
1 River Road Schenectady 5 NY (1 thru 6)
Gleason-Avery Inc 45 Aurelius Ave Auburn NY
(4)
Globe Industries Inc 1784 Stanley Ave Dayton 4
Ohio (1 thru 5)
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY (1 thru 4)—ADV PG 2
Hansen Mfg Co Inc RR #1 Princeton Ind (1-4)
Hawker Siddeley Brush Inc 34-14 58th St Wood-
side 77 NY (1-2-3-6)
Haydon (A W) Co 232 N Elm St Waterbury Conn
(1-3-4-5-6)
Heinze Electric Co 685 Lawrence St Lowell Mass
(1-4)
Holtzer-Cabot Corp 125 Amory St Boston 19
Mass (1-2-3-4)
Howard Industries Inc 1760 State St Racine Wis
(1 thru 4)
Howell Electric Motors Co 409 N Roosevelt Howell
Mich (2-4)
IMC Magnetics Corp 570 Main St Westbury NY
(1)
Ideal Electric and Mfg Co East First St Mansfield
Ohio (1 thru 6)

Imperial Electric Co 84 Ira Ave Akron 9 Ohio
(1-2-6)
Jack & Heintz Div Siegler Corp P O Box 6719
Cleveland 1 Ohio (2-4)
Kearfott Div General Precision Inc 12690 Elm-
wood Ave Cleveland 11 Ohio (1-2)
Kingston Conley Inc Plainfield NJ (2-4)
Kurz & Root Sales & Engineering Corp 232 East
North Island St Appleton Wis (1 thru 4)
Leland Electric Co 1501 Webster St Dayton 1
Ohio (1-2-4)
Lewus Electric Co 1254 W Harrison St Chicago 7
Ill (4)
Lima Electric Motor Co Inc Findlay Road Lima
Ohio (2-4)
Lincoln Electric Co 22801 St Clair Ave Cleveland
17 Ohio (2)
Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles
22 Calif (2-4)
Marathon Electric Mfg Corp Wausau Wis (1
thru 4)
Marble Electric Corp Gladstone Mich (1-2)
Master Electric Div Reliance Electric & Engineering
Co 24701 Euclid Ave Cleveland Ohio (1 thru 4)
McMillan Mfg Co 310 Broadway St Paul 1 Minn
(4)
Motoresearch Co 1600 Junction Ave Racine Wis
(2-4)
Newman Electric Motors Inc 357 Wilson Ave
Newark 5 NJ (2-3-4)
Northwestern Electric Co 1750 N Springfield Ave
Chicago 47 Ill (1-2-4)
Peerless Electric Div H K Porter Co Inc 1401 W
Market St Warren Ohio (1-2-3-4)
Rae Motor Corp Box 518 McHenry Ill (1)
Redmond Co Inc 201 Monroe St Owosso Mich (1)
Reliance Electric & Engineering Co 24701 Euclid
Ave Cleveland 17 Ohio (1-2)
Reuland Electric Co 3001 W Mission Rd Alham-
bra Calif (2-3)
Reynolds Electric Co 3000 River Rd River Grove
Ill (2-4)
Robbins & Myers Inc 1345 Lagonda Ave Spring-
field Ohio (1-2-3-4)
Safety Electrical Equipment Corp 1187 Dixwell
Ave New Haven Conn (1-2-6)
Servo-Tek Products Co Inc 1086 Goffe Rd Haw-
thorne NJ (1)
Shelby Electric Inc East US Highway #421
Shelbyville Ind (2-3-4)
Small Motors Inc 2076 Elston Ave Chicago 14
Ill (1-4)
Standard Electric Div Standard Dayton Corp P O
Box 1001 Dayton 1 Ohio (2-4)
Superior Electric Co 383 Middle St Bristol Conn
(4)
System Analyzer Corp 700 W State St Nokomis
Ill (2-4)
Technical Electronics Co 4060 Ince Blvd Culver
City Calif (4)
United Electric & Engineering Co 8545 W 64 Pl
Arvada Colo (1-2-4-6)
United Electric Motor Co 178 Centre St NY 13
NY (3)
U S Electrical Motors Inc 200 E Slauson Ave Los
Angeles 54 Calif (2)
Universal Electric Co 300 E Main St Owosso
Mich (1-4)
Wagner Electric Corp 6400 Plymouth Ave St Louis
33 Mo (2-3-4)
Western Gear Corp Electro Products Div 132 W
Colorado St Pasadena 1 Calif (1 thru 4)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1 thru 6)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway
Center (Box 448) Pittsburgh 30 Pa (1-2-3-4)
—ADV PG 2nd cover

8C. MOTORS—ENCLOSURE

1. Drip-proof
2. Explosion-proof
3. Splash-proof
4. Weatherproof
5. Hermetic
6. Submersible
7. Totally enclosed
8. Encapsulated

Air-Marine Motors Inc East Bethpage Rd Plain-
view NY (1-2-3-4-6-7)
Alliance Mfg Co Inc Lake Park Blvd Alliance
Ohio (4)
Allis (Louis) Co 427 East Stewart St Milwaukee
1 Wis (1 thru 7)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee
1 Wis (1-2-3-4-7)
Baldor Electric Co 4353 Duncan Ave St Louis 10
Mo (1-2-3-4-7)
Bodine Electric Co 2500 W Bradley Pl Chicago 18
Ill (7)
Bogue Electric Mfg Co 52 Iowa Ave Paterson 3
NJ (1-2-3-4-6-7)
Brook Motor Corp 3302-4 W Peterson Ave Chicago
45 Ill (1-2-3-4-7)

Century Electric Co 18th & Pine Sts St Louis 3
Mo (1-2-3-4-5-6-7)
Chandeysson Electric Co 4084 Bingham Ave St
Louis 16 Mo (1-3-4)
Continental Electric Co Inc 325 Ferry St Newark
5 NJ (1-2-3-7)
Cyclo-Freez Corp 6318 Cambridge Minneapolis 16
Minn (1-7)
Dayton Electric Mfg Co 5959 W Howard St Chi-
cago 48 Ill (1-2-3-7)
Delco Products Div General Motors Corp 329 E
1st St Dayton 1 Ohio (1-2-3-4-5-7)
Electra Motors Inc 1110 N Lemon St Anaheim
Calif (1-2-3-4-7)
Electric Indicator Co Inc Camp Ave Springdale
Conn (1-2-3-4)
Electric Machinery Mfg Co 800 Central Ave Min-
neapolis 13 Minn (1-3-4-5-7)
Electric Motors & Specialties Inc King & Hamsher
Sts Garrett Ind (4-7)
Electro Dynamic Div General Dynamics Corp 163
Ave A Bayonne NJ (1-2-3-4-6-7)
Elliott Co Jeannette Pa (1-2-3-4-7)
Emerson Electric Mfg Co 8100 Florissant Ave St
Louis 36 Mo (1-5)
Fairbanks Morse & Co Electrical Div 303 N Hen-
derson Freepoint Ill (1 thru 4-6-7)
Fasco Industries Inc Davis & Toppin Sts Roch-
ester 2 NY (1-2-3-4-6-7)
Franklin Electric Co Inc 400 E Spring St Bluffton
Ind (1-2-3-4-6-7)
General Electric Co Industrial Sales Operation
1 River Road Schenectady 5 NY (1 thru 7)
Globe Industries Inc 1784 Stanley Ave Dayton 4
Ohio (1 thru 7)
Hansen Mfg Co Inc RR #1 Princeton Ind (7)
Hawker Siddeley Brush Inc 34-14 58th St Wood-
side 77 NY (1-2-3-4-7)
Haydon (A W) Co 232 N Elm St Waterbury Conn
(4)
Holtzer-Cabot Corp 125 Amory St Boston 19
Mass (7)
Howard Industries Inc 1760 State St Racine Wis
(7)
Howell Electric Motors Co 409 N Roosevelt Howell
Mich (1-2-3-4-7)
Ideal Electric and Mfg Co East First St Mansfield
Ohio (1-3-4-7)
Jack & Heintz Div Siegler Corp P O Box 6719
Cleveland 1 Ohio (1-2-3-6-7)
Kearfott Div General Precision Inc 12690 Elm-
wood Ave Cleveland 11 Ohio (1)
Kingston Conley Inc Plainfield NJ (1-7)
Kurz & Root Sales & Engineering Corp 232 East
North Island St Appleton Wis (1-3-7)
Leland Electric Co 1501 Webster St Dayton 1
Ohio (1-2-6-7)
Lima Electric Motor Co Inc Findlay Road Lima
Ohio (1-2-4-7)
Lincoln Electric Co 22801 St Clair Ave Cleveland
17 Ohio (1-8)
Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles
22 Calif (1-2-3-4-7)
Marathon Electric Mfg Corp Wausau Wis (1-2-3-
4-7)
Marble Electric Corp Gladstone Mich (2-3-4-7)
Master Electric Div Reliance Electric & Engineering
Co 24701 Euclid Ave Cleveland Ohio (1 thru
4-7)
McMillan Mfg Co 310 Broadway St Paul 1 Minn
(4-7)
Motoresearch Co 1600 Junction Ave Racine Wis
(1-7)
Newman Electric Motors Inc 357 Wilson Ave
Newark 5 NJ (1-2-3-4-7)
Northwestern Electric Co 1750 N Springfield Ave
Chicago 47 Ill (1-3-7)
Peerless Electric Div H K Porter Co Inc 1401
W Market St Warren Ohio (1-2-3-4-6-7)
Rae Motor Corp Box 518 McHenry Ill (7)
Redmond Co Inc 201 Monroe St Owosso Mich
(1-3-7)
Reliance Electric & Engineering Co 24701 Euclid
Ave Cleveland 17 Ohio (1 thru 7)
Reuland Electric Co 3001 W Mission Rd Alham-
bra Calif (1-3-4-7)
Reynolds Electric Co 3000 River Rd River Grove
Ill (1-3)
Robbins & Myers Inc 1345 Lagonda Ave Spring-
field Ohio (1-2-3-4-7)
Safety Electrical Equipment Corp 1187 Dixwell Ave
New Haven Conn (1-2-3-4-7)
Servo-Tek Products Co Inc 1086 Goffe Rd Haw-
thorne NJ (7)
Shelby Electric Inc East US Highway #421 Shel-
byville Ind (1-3-7)
Small Motors Inc 2076 Elston Ave Chicago 14
Ill (1-3-4-7)
Standard Electric Div Standard Dayton Corp P O
Box 1001, Dayton 1 Ohio (1-4-7)
Superior Electric Co 383 Middle St Bristol Conn
(2)
System Analyzer Corp 700 W State St Nokomis
Ill (1-4-7)
United Electric & Engineering Co 8545 W 64 Pl
Arvada Colo (1-2-3-4-7)
U S Electrical Motors Inc 200 E Slauson Ave Los
Angeles 54 Calif (1-2-3-4-7)
Universal Electric Co 300 E Main St Owosso
Mich (1-3-7)
Wagner Electric Corp 6400 Plymouth Ave St Louis
33 Mo (1 thru 7)
Western Gear Corp Electro Products Div 132 W
Colorado St Pasadena 1 Calif (1 thru 7)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1 thru 7)

8D. MOTORS—APPLICATION

1. Brake
2. Gear
3. Aircraft
4. Automotive
5. Railway
6. Mining
7. Marine
8. Timing
9. Oil burner
10. Elevator
11. Pump
12. Crane & hoist
13. Power tool
14. Sewing machine
15. Instrument
16. Fan
17. Agitator drive
18. Stepping
19. Textile
20. Cranking
21. Vertical
22. Press
23. Sanitary
24. Arbor
25. Shell-type

Abrams Instrument Corp 606 E Shiawase St Lansing Mich (18)
 Adams Engineering Co 31711 Solon Rd Solon Ohio (2)
 Air-Marine Motors Inc East Bethpage Rd Plainville NY (2-16)
 Alliance Mfg Co Inc Lake Park Blvd Alliance Ohio (8-11-16)
 Allis (Louis) Co 427 E Stewart St Milwaukee 1 Wis (1-2-10-11-12-13-16)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (2-7-11-12-19-21)
 Atlas Tool and Mfg Co 5147 Natural Bridge Ave St Louis 15 Mo (2)
 Baldor Electric Co 4353 Duncan Ave St Louis 10 Mo (7)
 Barber-Colman Co P O Drawer 99 Rockford Ill (2-3-15-16)
 Bernina Sewing Machine Co 29 W 35 St NY 1 NY (14)
 Bodine Electric Co 2500 W Bradley Pl Chicago 18 Ill (8-11-13-14-15)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (3-5-7-11)
 Boston Gear Works 14 Hayward St Quincy 71 Mass (2)
 Bristol Motor Div Vocaine Co of America Inc Coulter St Old Saybrook Conn (8)
 Brook Motor Corp 3302-4 W Peterson Ave Chicago 45 Ill (10-11-12)
 Carter Motor Co 2711 W George St Chicago 18 Ill (2-16-17)
 Century Electric Co 18th & Pine Sts St Louis 3 Mo (1-2-7-9 thru 14-16-17-19-21-23)
 Cleveland Electric Motor Co 5213 Chester Ave Cleveland 3 Ohio (1-10-11-12-16)
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ (10-11-12)
 Cramer Div Giannini Controls Corp Old Saybrook Conn (8)
 Cyclo-Freez Corp 6318 Cambridge Minneapolis 16 Minn (9-11-16)
 Daimler Co 1375 Clay St Santa Clara Calif (1-2-3-8-16)
 Delco Products Div General Motors Corp 329 E 1st St Dayton 1 Ohio (1 thru 7-9-10-11-13-16)
 Dumore Co 1300 17th St Racine Wis (2)
 Electra Motors Inc 1110 N Lemon St Anaheim Calif (1-2-10-11-12-13-16)
 Electric Indicator Co Inc Camp Ave Springdale Conn (1-2-3-5-6-7-8-11-13-15-16)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (6-11-16-21)
 Electric Motors & Specialties Inc King & Hamsher Sts Garrett Ind (16)
 Electrical Mfg Co 425 Lake Ave Racine Wis (14)
 Electro Dynamic Div General Dynamics Corp 163 Ave A Bayonne NJ (1 thru 15)
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif (1-3)
 Elliott Co Jeannette Pa (2-9-11-12-16)
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill (1-2-5-6-7-9-10-11-12-16)
 Falk Corp Box 492 Milwaukee 1 Wis (2)
 Fasco Industries Inc Davis & Toppin Sts Rochester 2 NY (9-11-13-15-16-21)
 Franklin Electric Co Inc 400 E Spring St Bluffton Ind (2-11-12-13-16-21-23)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 3 NY (1-2-4 thru 7-9 thru 17-19-21-22)
 Gleason-Avery Inc 45 Aurelius Ave Auburn NY (2-8-15)
 Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio (1-2-3-4-6-7-8-11-13 thru 17)
 Hagen Mfg Co 104 Walnut St Baraboo Wis (8-15)
 Hansen Mfg Co Inc RR #1 Princeton Ind (8-15)
 Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (12)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (6-7-11-21)
 Haydon (A W) Co 232 N Elm St Waterbury Conn (8-15-18)
 Heinze Electric Co 685 Lawrence St Lowell Mass (2-4-14-16)
 Holtzer-Cabot Corp 125 Amory St Boston 19 Mass (2-8-15)

Howard Industries Inc 1760 State St Racine Wis (2-3-4-13-14-15-16)
 Howell Electric Motors Co 409 N Roosevelt Howell Mich (1-2-10-11-12)
 Ideal Electric and Mfg Co East First St Mansfield Ohio (2-11-21)
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio (1-24-25)
 International Register Co 2620 W Washington Blvd Chicago 12 Ill (8)
 Jack & Heintz Div Siegler Corp P O Box 6719 Cleveland 1 Ohio (11-12-17-21)
 Jannette Electric Mfg Co Lehigh at Main Sts Morton Grove Ill (2)
 Kingston Conley Inc Plainfield NJ (11-12-13-16)
 Kurz & Root Sales & Engineering Corp 232 E North Island St Appleton Wis (10)
 Leduc 123 Webster St Dayton 2 Ohio (18)
 Leece-Neville Co 1374 E 51 St Cleveland 3 Ohio (20)
 Leland Electric Co 1501 Webster St Dayton 1 Ohio (1-11-12-13)
 Lima Electric Motor Co Inc Findlay Road Lima Ohio (1-2-11-13-16)
 Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles 22 Calif (1-2)
 Marathon Electric Mfg Corp Wausau Wis (6-7-9-11-13-16)
 Marble Electric Corp Gladstone Mich (1-2-6-7-11-12-16)
 Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio (1-2-7-10-11-12-13-16)
 McMillan Mfg Co 310 Broadway St Paul 1 Minn (2-8-9-11-15-16-17)
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windrim Aves Phila 44 Pa (15)
 Morse Chain Co Borg Warner Corp Ithaca NY (2)
 Motor Specialty Inc 2801-17 Lathrop Ave Racine Wis (13-14)
 Motoresearch Co 1600 Junction Ave Racine Wis (2-3)
 Newman Electric Motors Inc 357 Wilson Ave Newark 5 NJ (1-2-10-11-21)
 Northwestern Electric Co 1750 N Springfield Ave Chicago 47 Ill (2-3-5-6-7-10-11-12-16)
 Peerless Electric Div H K Porter Co Inc 1401 W Market St Warren Ohio (1-6-7-10-11-12-13-16)
 Rae Motor Corp Box 518 McHenry Ill (1-2-14)
 Redmond Co Inc 201 Monroe St Owosso Mich (7-9-11-13-16)
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (1-2-6-7-10-11-12-13-16-22-23)
 Reuland Electric Co 3001 W Mission Rd Alhambra Calif (1-2-10-11-12)
 Reynolds Electric Co 3000 River Rd River Grove Ill (16)
 Robbins & Myers Inc 1345 Lagoda Ave Springfield Ohio (9 thru 13-16)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (1-5-7-11-12-22)
 Sangamo Electric Co 11th & Converse Springfield Ill (8)
 Servo Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ (7)
 Shelby Electric Inc East US Highway #421 Shelbyville Ind (1-2-11-12-13-16-17)
 Small Motors Inc 2076 Elston Ave Chicago 14 Ill (3-9-11-15-16)
 Standard Electric Div Standard Dayton Corp P O Box 1001 Dayton 1 Ohio (1-2-10-11-12-13)
 Superior Electric Co 383 Middle St Bristol Conn (18)
 United Electric & Engineering Co 8545 W 64 Pl Arvada Colo (1-2-5-6-10-11-12-13-16-17)
 U S Electrical Motors Inc 200 E Slauson Ave Los Angeles 54 Calif (2-3-10-11-16)
 Universal Electric Co 300 E Main St Owosso Mich (9-11-16)
 Western Gear Corp Electro Products Div 132 W Colorado St Pasadena 1 Calif (1-2-3-8-11-15-16)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 7-9 thru 13-16 thru 23)

8E. GENERATORS

1. Alternating current
2. Direct current
3. High frequency
4. Magnet

For changing mechanical energy to electrical energy; often called "dynamios" or "alternators."

Ajax Magnethermic Corp 3990 Simon Rd Youngstown 1 Ohio (3)
 Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (1-2)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-2)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (1-2)
 Century Electric Co 1806 Pine St St Louis 3 Mo (1-2)

Chandeyson Electric Co 4884 Bingham Ave St Louis 16 Mo (1-2)
 Columbia Electric Mfg Co 4519 Hamilton Ave Cleveland 14 Ohio (1-2)
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ (1-2)
 Daimler Co 1375 Clay St Santa Clara Calif (1-2)
 Delco Products Div General Motors Corp 329 E 1st St Dayton 1 Ohio (1-2)
 Electric Indicator Co Inc Camp Ave Springdale Conn (1-2-3-4)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (1-4)
 Electric Products Co 1725 Clarkstone Rd Cleveland 12 Ohio (1-2)
 Electro Dynamic Div General Dynamics Corp 163 Ave A Bayonne NJ (2)
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif (1-2-3)
 Elliott Co Jeannette Pa (1-2)
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill (1-2)
 Fidelity Electric Co Inc 332 N Arch St Lancaster Pa (1)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 3 NY (1 thru 4)
 Georator Corp Manassas Va (1-2)
 Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio (1-2-3)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (1-2)
 Haydon (A W) Co 232 N Elm St Waterbury Conn (1-2-3)
 Holtzer-Cabot Corp 125 Amory St Boston 19 Mass (1-2)
 Homelite Div Textron Inc 67 Riverdale Ave Port Chester NY (1-2)
 Ideal Electric and Mfg Co East First St Mansfield Ohio (1-2-3)
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio (2)
 Kato Engineering Co 1442 First Ave Mankato Minn (1)
 Katolight Corp First Ave at Chestnut (P O Box 891) Mankato Minn (3)
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio (1-2-3-4)
 Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis (1-2)
 Leece-Neville Co 1374 E 51 St Cleveland 3 Ohio (1-2)
 Leland Electric Co 1501 Webster St Dayton 1 Ohio (1-2)
 Marathon Electric Mfg Corp Wausau Wis (1-2)
 Marble Electric Corp Gladstone Mich (1-2)
 Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio (1-2)
 Motoresearch Co 1600 Junction Ave Racine Wis (1-2)
 Northwestern Electric Co 1750 N Springfield Ave Chicago 47 Ill (1-2)
 Onan Div Studebaker-Packard Corp 2515 University Ave S E Minneapolis 14 Minn (1-2)
 Peerless Electric Div H K Porter Co Inc 1401 W Market St Warren Ohio (2)
 Rae Motor Corp Box 518 McHenry Ill (2)
 Robbins & Myers Inc 1345 Lagoda Ave Springfield Ohio (1)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (1-2-3)
 Sangamo Electric Co 11th & Converse Springfield Ill (2)
 Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ (2-4)
 Small Motors Inc 2076 Elston Ave Chicago 14 Ill (1-2)
 Tocco Div Ohio Crankshaft Co 3800 Harvard Ave Cleveland 5 Ohio (3)
 U S Electric Motor Co Cadiz Ohio (4)
 Varo Inc 2201 Walnut St Garland Tex (1)
 Welduction Corp 19400 W Eight Mile Rd (P O Box 146) Southfield Mich (3)
 Western Gear Corp Electro Products Div 132 W Colorado St Pasadena 1 Calif (1-2)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3)
 Wincharger Corp E Seventh & Division St Sioux City 2 Iowa (1-2)
 Winpower Mfg Co Newton Iowa (1-2)

8F. POWER GENERATING SETS

1. Steam engine powered
2. Steam turbine powered
3. Diesel engine powered
4. Gasoline engine powered
5. Gas turbine powered
6. Mercury turbine powered
7. Balancer sets
8. Motor-driven (M-G sets)

Engine-driven generating plants for providing electricity for power or lighting.

Ajax Magnethermic Corp 3990 Simon Rd Youngstown 1 Ohio (8)

Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis (8)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (2-3-4-7-8)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (3-8)
 Caterpillar Tractor Co Industrial Engine Plant Peoria Ill (3-5)
 Century Electric Co 18th & Pine Sts St Louis 3 Mo (8)
 Chandeysson Electric Co 4084 Bingham Ave St Louis 16 Mo (3-4-8)
 Columbia Electric Mfg Co 4519 Hamilton Ave Cleveland 14 Ohio (8)
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ (8)
 Coppus Engineering Corp 344 Park Ave Worcester 10 Mass (2)
 Dayton Electric Mfg Co 5959 W Howard St Chicago 48 Ill (4)
 Detroit Diesel Engine Div General Motors Corp 13400 W Outer Dr Detroit 28 Mich (3)
 Electric Indicator Co Inc Camp Ave Springdale Conn (8)
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn (8)
 Electric Products Co 1725 Clarkstone Rd Cleveland 12 Ohio (8)
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif (8)
 Elliott Co Jeannette Pa (1-2-3-5-8)
 Empire Corp 1566 S 83rd St Milwaukee 14 Wis (3-4)
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill (3-4-8)
 GM Diesel 13400 Outer Dr Detroit 28 Mich (3)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2-5-7-8)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (8)—ADV PG 2
 Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (3)
 Hawker Siddeley Brush Inc 34-14 58th St Woodside 77 NY (2-3-5-8)
 Homelite Div Textron Inc 67 Riverdale Ave Port Chester NY (4)
 Howard Industries Inc 1760 State St Racine Wis (4)
 Ideal Electric and Mfg Co East First St Mansfield Ohio (1 thru 5-8)
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio (8)
 International Ferromont Inc Ramapo NY (3-4-5)
 Jeta Inc Yonkers NY (3-4)
 Kato Engineering Co 1442 First Ave Mankato Minn (8)
 Katolight Corp First Ave at Chestnut (P O Box 891) Mankato Minn (3-4-8)
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio (8)
 Kohler Co Kohler Wis (3-4)
 Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis (8)
 Leach Corp 18435 Susana Rd Compton Calif (8)
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (4)
 Marble Electric Corp Gladstone Mich (8)
 Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio (8)
 Milwaukee Electric Tool Corp 5368 W State St Milwaukee 8 Wis (4)
 Moon Mfg Co 108 N Jefferson St Chicago 6 Ill (2)
 Motoresearch Co 1600 Junction Ave Racine Wis (4)
 Nordberg Mfg Co 3073 S Chase Ave Milwaukee 1 Wis (3)
 Northwestern Electric Co 1750 N Springfield Ave Chicago 47 Ill (8)
 Onan Div Studebaker-Packard Corp 2515 University Ave S E Minneapolis 14 Minn (3-4)
 Pioneer Gen-E-Motor Co 5841 W Dickens Ave Chicago 39 Ill (4)
 Potter & Rayfield Inc P O Box 1042 Atlanta Ga (7)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (2)
 Ready-Power Co 11231 Freud Ave Detroit 14 Mich (3-4)
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio (8)
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn (8)
 Thor Power Tool Co 175 N State St Aurora Ill (4)
 Tocco Div Ohio Crankshaft Co 3800 Harvard Ave Cleveland 8 Ohio (8)
 U S Electric Motor Co Cadiz Ohio (3-4)
 United States Motors Corp 102 W Fifth Ave Oshkosh Wis (3-4)
 Universal Motor Co 438 Universal Dr Oshkosh Wis (3-4)
 Varo Inc 2201 Walnut St Garland Tex (2-8)
 Waukesha Motor Co Waukesha Wis (3-4)
 Welduction Corp 19400 W Eight Mile Rd (P O Box 146) Southfield Mich (8)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3-5-8)
 Wincharger Corp E Seventh & Division St Sioux City 2 Iowa (4)
 Winpower Mfg Co Newton Iowa (3-4)
 Young Engine Corp P O Box 532 Canton Ohio (4)

8G. DYNAMOTORS

Rotating machine for changing dc power from one voltage to another.

Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ
 Carter Motor Co 2711 W George St Chicago 10 Ill
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ
 Daimotor Co 1375 Clay St Santa Clara Calif
 Dynamatic Div Eaton Mfg Co 3122 14th Ave Kenosha Wis
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
 Haydon (A W) Co 232 N Elm St Waterbury Conn
 Holtzer-Cabot Corp 125 Armory St Boston 19 Mass
 Howard Industries Inc 1760 State St Racine Wis
 JMC Magnetics Corp 570 Main St Westbury NY
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn
 Sangamo Electric Co 11th & Converse Springfield Ill
 Small Motors Inc 2076 Elston Ave Chicago 14 Ill
 Wagner Electric Corp 6400 Plymouth Ave St Louis 33 Mo
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa

Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis
 Electra Motors Inc 1110 N Lemon St Anaheim Calif
 Electric Machinery Mfg Co 800 Central Ave Minneapolis 13 Minn
 Electric Products Co 1725 Clarkstone Rd Cleveland 12 Ohio
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
 Haydon (A W) Co 232 N Elm St Waterbury Conn
 Ideal Electric and Mfg Co East First St Mansfield Ohio
 Imperial Electric Co 84 Ira Ave Akron 9 Ohio
 Lewis-Shepard Products Inc 125 Walnut St Water-town Mass
 Link-Belt Co 1700 Prudential Plaza Chicago 1 Ill
 Lionel-Pacific Inc 5401 Telegraph Rd Los Angeles 22 Calif
 Morse Chain Co Borg Warner Corp Ithaca NY
 Reeves Pulley Div Reliable Electric & Engineering Co 1225 7th St Columbus Ind
 Servo Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ
 Servospeed Div Electro Devices Inc 4 Godwin Ave Paterson NJ
 Square D Co Executive Plaza Park Ridge Ill
 U S Electrical Motors Inc 200 E Slauson Ave Los Angeles 54 Calif
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa

8H. EXCITERS

For providing and maintaining magnetic field of motors or generators.

Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis
 Century Electric Co 1806 Pine St St Louis 3 Mo
 Continental Electric Co Inc 325 Ferry St Newark 5 NJ
 Electronic Specialty Co 5121 San Fernando Rd Los Angeles 39 Calif
 Elliott Co Jeannette Pa
 Fairbanks Morse & Co Electrical Div 303 N Henderson Freepoint Ill
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY
 Ideal Electric and Mfg Co East First St Mansfield Ohio
 Kato Engineering Co 1442 First Ave Mankato Minn
 Kearfott Div General Precision Inc 12690 Elmwood Ave Cleveland 11 Ohio
 Kurz & Root Sales & Engineering Corp 232 East North Island St Appleton Wis
 Marathon Electric Mfg Corp Wausau Wis
 Master Electric Div Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland Ohio
 Northwestern Electric Co 1750 N Springfield Ave Chicago 47 Ill
 Reliance Electric & Engineering Co 24701 Euclid Ave Cleveland 17 Ohio
 Richardson-Allen Corp 116-15 Fifteenth Av College Point LI NY
 Safety Electrical Equipment Corp 1187 Dixwell Ave New Haven Conn
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
8-1	Motors; 40p (Air Marine)
8-2	Motors; 16p (Alliance)
8-3	Electric Motors & Generators; 8p; Cat. No. F-2005 (Delco)
8-4	Motors & Generators; 35p; Cat. No. 200-PRD-215A (Electric Machinery)
8-5	Generators; 28p; Cat. No. E1-1C (Electric Indicator)
8-6	Induction Motors & Blowers; 18p (Fasco)
8-7	Motors; 14p; Cat. No. GEC-1049 (GE Co.)
8-8	Marine Auxiliary Electrical Power Plant; 8 p; Cat. No. 95054 (Hawker Siddeley)
8-9	Generators and Motors; 12p; Cat. No. 31059 (Hawker Siddeley)
8-10	Generators and Motors; 8p; Cat. No. 31058 (Hawker Siddeley)
8-11	Revolving Field Alternators; 8p; Cat. No. 21062 (Hawker Siddeley)
8-12	Fractional Horsepower Motors; 139p; Cat. No. 59-1 (Howard)
8-13	Gear Motors; 64p; Cat. No. 400 (Lionel-Pacific)
8-14	A. C. Squirrel Cage Motors; 56p; Cat. No. 200 (Lionel-Pacific)

8J. VARIABLE SPEED DRIVES

Allis (Louis) Co 427 East Stewart St Milwaukee 1 Wis
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis
 Boston Gear Works 14 Hayward St Quincy 71 Mass
 Century Electric Co 18th & Pine Sts St Louis 3 Mo
 Cleveland Worm & Gear Div Eaton Mfg Co 3300 E 80 St Cleveland 4 Ohio

SECTION 9. LIGHTING EQUIPMENT AND LAMPS

See Section 5 for fixture hangers and supports, ballasts, and other lamp accessories; dimmers are listed in 3J.

9A. RESIDENTIAL LIGHTING FIXTURES

1. Ceiling downlights
2. Ceiling suspended units
3. Fluorescent
4. Vaporproof
5. Over-all ceilings
6. Wall brackets
7. Bath mirror lights
9. Stair tread lights
10. Portable lamps (floor, table, desk, bed)
11. Entrance, porch, driveway, patio lights
12. Garden lights
13. Illuminated house numbers
14. Night lights
15. Post lights
16. Ultra-violet garden lighting

A K Electric Corp 231 Front St Brooklyn 1 NY (12)
 ADW Corp 450 N Ninth St Elwood Ind (10)
 Ace Lighting Products Co 171 Broad St SW Atlanta 3 Ga (1-2-3-6-7-11-15)
 Acme Lighting & Mfg Co 949 E 31 St Los Angeles 11 Calif (3)
 Acme Lite Products Co Inc Congers NY (10)
 Active Specialty Corp Elm St Walden NY (1-2-6-7-10-11)
 Adjusta Post Mfg Co 908 St Clair St Akron 7 Ohio (15)
 Aerolux Light Corp 653 11th Ave New York 36 NY (10)
 Afco Lite Corp 1378 N Wolcott Chicago 22 Ill (11-12)
 Alkco Mfg Co 4224 N Lincoln Ave Chicago 18 Ill (1-3)
 All-Brite Light Co 400 S 12 St Reading Pa (3)
 American Fluorescent Corp 1243 N Paulina St Chicago 22 Ill (3-6-7)
 Amplex Corp Glen Cove Rd Carle Place Long Island NY (10)
 Andrews (A M) Co 4621 S W Beaverton Hwy Portland 1 Ore (15)
 Apollo Lighting Fixture Co Inc 162 W Third St Mt Vernon NY (3)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (12)
 Arrow Lamps Inc 1270 Broadway New York 1 NY (10)
 Art Metal Co 1814 E 40 St Cleveland 3 Ohio (1-6-7-9-11)
 Art Metal Lighting Div Wakefield Corp 1814 E 40 St Cleveland 3 Ohio (1-6-7-9-11)
 Art Specialty Co 3720 N Milwaukee Ave Chicago 41 Ill (10)
 Artcraft Lighting Co Inc 248 McKibbin St Brooklyn 6 NY (2-6)
 Artistic Lamp Mfg Co Inc 109 Eighth St Passaic NJ (2-10)
 Artolier Corp 141 Lanza Ave Garfield NJ (1-2-6-11-12)
 Atlas Electric Products Co 319 Ten Eyck St Brooklyn 6 NY (1-9-11)
 B M D & R Inc 7020 Walker St St Louis Park Minneapolis 16 Minn (15)
 Beckley Electric Co Inc 468-470 Grand Ave Brooklyn 38 NY (12)
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (11-12)
 Black (M) Mfg Co 300-08 N Third St Phila 6 Pa (11-12)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (3-11-12)
 Calpa Products Co 5420 Paschall Ave Phila 43 Pa (10)
 Calumet Plastics Inc 11201 S Cottage Grove Avenue Chicago 28 Ill (13)
 Canning-Pekara Inc 2144 N Wood St Chicago 14 Ill (3-6)
 Cannon Electric Co 3208 Humboldt St Los Angeles 31 Calif (12)
 Ceiling Materials Co 200 Waring Rd Memphis 17 Tenn (5)
 Columbia Lighting North 2310 Fancher Way Spokane Wash (5)
 Comet Lamp Co 5 E 35 St New York 16 NY (2)

Compco Corp 1800 N Spaulding Ave Chicago 47 Ill (1-2-3-6-9-11)
 Condi-Lite Corp 889 Broadway New York 3 NY (1)
 Crescent Mfg Co 785 Schuylkill Ave Philadelphia 46 Pa (3-6-7)
 Curtis Development & Mfg Co 3244 N 33 St Milwaukee 16 Wis (13)
 Day-Brite Lighting Inc 6260 N Broadway St Louis 15 Mo (1)
 Dazor Mfg Corp 4481-99 Duncan Ave St Louis 10 Mo (10)
 Diffusa-Lite Co 1 Forrest St Conshohocken Pa (5)
 Duralite Lanterns Inc 163 Long Beach Rd Island Park NY (11-15)
 Duray Fluorescent Mfg Co 3318 W Montrose Ave Chicago 18 Ill (3)
 E J S Lighting Corp 321 E Pico Blvd Los Angeles 21 Calif (2-6-10)
 E-Lite Co Inc 111 W 22 St New York 11 NY (1-2-6)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (6-7-9-10-11-12-14)
 Eagle Mfg Co 3508 Avalon Blvd Los Angeles 11 Calif (1-6-10)
 Electric House Number Co 8670 W Washington Blvd Culver City Calif (13)
 Emerson-Imperial Lighting Co Loyahanna Park Latrobe Pa (1-2-6-7-11)
 Emerson-Pryne Co Towne Ave at Monterey (P D Box 698) Pomona Calif (1-11)
 Esty Mfg Co 112 S Sangamon St Chicago 7 Ill (1-2-3-6-7-11)
 Everglow Lighting Fixture Co Inc 332 E Jericho Turnpike Huntington Station NY (3-11)
 Federal Lighting Corp 1425 Rockwell Ave Cleveland 14 Ohio (1-2-3-6-11-13)
 Flexo International Corp 3720 N Milwaukee Ave Chicago 41 Ill (10)
 Fluorescent Equipment & Mfg Co 5105 Cowan Ave Cleveland 27 Ohio (3-7)
 Fluorescent Fixtures of California 352 Shaw Rd South San Francisco Calif (3)
 Frisbie (H C) Co 1120 E Pico Blvd Los Angeles 21 Calif (1-2-4-5-6-11)
 Gem Electric Mfg Co Inc 237 37th Street Brooklyn NY (11-14)
 General Bathroom Products Corp 1056 N Wood St Chicago 27 Ill (3-6-7)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (12-15)
 General Industries Inc 34529 Ford Rd Garden City Mich (11-12)
 General Lighting Co 248 McKibbin St Brooklyn 6 NY (1-2-3-6-10-11)
 Geininger & Sons Mfg Corp Peekskill NY (1-2-3-6-7-11)
 Gill Glass & Fixture Co Philadelphia 34 Pa (1-2-6-7)
 Globe Lighting Products Inc 1710 Flushing Ave Brooklyn 37 NY (1-2-3-6-10-11-12)
 Gotham Lighting Corp 37-01 31st St Long Island City 1 NY (1-2-3-5-6-7)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (2)—ADV PG 2
 Grayco Products 3830 W Kedzie Chicago 18 Ill (3-6-7-12-16)
 Great Northern Mfg Corp 1056 N Wood St Chicago 22 Ill (3)
 Grote Mfg Co Madison Ind (3-7)
 Guth (Edwin F) Co 2615 Washington Blvd St Louis 77 Mo (1-3-5-6-11)
 Hadco Aluminum Products Co P O Box 128 Littletown Pa (11-15)
 Halo Lighting Products Inc 4201 Grand Ave Chicago 51 Ill (1-2-3-6-7-9-11-14)
 Hasco Electric Corp 84 S Water St Byram Conn (3-12)
 Holophane Co Inc 342 Madison Ave New York 17 NY (11)
 House-O-Lite Corp 5700 S Perry Ave Chicago 21 Ill (1-3-6-7)
 Independent Protection Co Inc 1605-07 S Main St Goshen Ind (11-12)
 Industrial Lamp Corp 14th & Blaine Sts Elkhart Ind (10)
 International Lighting Mfg Co 1825 N 19 St St Louis 6 Mo (1-2-3-6-7-11-12)
 Jackson Electrical Co 900 W Van Buren St Chicago 7 Ill (11)
 Jay Lighting Mfg Co Inc 23-29 Quincy St Brooklyn 38 NY (1-2-6-7)
 K-B Lighting Mfg Co 2101 Byberry Rd Phila 16 Pa (3-6-7)
 Kaisan Electric Co Inc 146 Mott St Oceanside LI NY (1-2-6-11)
 Kelly Specialty Co 5958-60 Washington Blvd Chicago 44 Ill (13)
 Kent Lighting Corp 500 Johnson Ave Brooklyn 37 NY (1-3-6)
 Keystone Electric Mfg Co 2228 E Tloga St Phila 34 Pa (3-6)
 Keystone Lamp Mfg Corp 230 Fifth Ave New York 1 NY (2-10-12)

Kichier (L D) Co 2101 Superior Ave Cleveland 14 Ohio (1-2-6-7)
 Kim Lighting & Mfg Co Inc 1467 N Lidcombe Ave El Monte Calif (11-12)
 Kirlin Co 3435 E Jefferson Ave Detroit 7 Mich (1-9-11)
 Kliegl Bros Universal Electric Stage Lighting Co Inc 321 W 50 St NY 19 NY (1)
 Klignite Mfg Co 6822 Lyndford St Philadelphia Pa (3)
 Koch & Lowy Inc 201 E 34 St New York 16 NY (6-10)
 Kuehn Mfg Co 78-80 Shipman St Newark 2 NJ (11-12-14)
 LAM Inc 414 Main St Wakefield Mass (3-6-7)
 Leader Lamp Mfg Co 476 Broome St NY 13 NY (1-2-6-7-11)
 Legion Lighting Co 221 Glenmore Ave Brooklyn 7 NY (3-6-7)
 Light O'Day Mfg Inc 15801 Livernois Detroit 38 Mich (3)
 Lightolier Inc 346 Claremont Ave Jersey City 5 NJ (1-2-3-6-7-10-11-12)
 Litecontrol Corp 36 Pleasant St Watertown 72 Mass (3-5)
 Litecraft Mfg Corp 100 Dayton Ave Passaic NJ (1 thru 7-9-11)
 Lithonia Lighting Products Co Box 206 Conyers Ga (3)
 Luminous Ceilings Inc 3701 N Ravenswood Ave Chicago 13 Ill (5)
 Luxo Lamp Corp Dock St Port Chester NY (2-10)
 Magni Flood Inc 50 Crary Ave Mt Vernon NY (11-12)
 Majestic Metal Spinning & Stamping Co Inc 537 Sackett St Brooklyn 17 NY (1-2-6)
 Marchand (A) Inc 101 Park Ave New York 17 NY (7)
 Market Electric Products Inc 145 Seneca St Buffalo 3 NY (1-2-6-11-12)
 Marks Mfg Co 700 N Carpenter St Chicago 22 Ill (10)
 Markstone Mfg Co 1531 N Kingsbury Chicago 22 Ill (1-2-3-6-7-11)
 Marvin Electric Mfg Co 648 Santa Fe Ave Los Angeles 21 Calif (1-3-6-11)
 Merbilien Mfg Co Inc 1329 Willoughby Ave Brooklyn 37 NY (1-6-7-12-14-15)
 Mendelson (L) Co Inc Furlong Pa (1-2-6-10)
 Metrolite Mfg Co 1000 N Division St Peekskill NY (11-12)
 Mid-West Chandelier Co 15th & Gentry (P D Box 7365) North Kansas City 16 Mo (3)
 Miller Co Illuminating Div 99 Center St Meriden Conn (2)
 Minoflector Co Inc 40 Bayview Ave Inwood LI NY (1-2-6-7-10-11)
 Mitchell Lighting Div Compco Corp 1800 N Spaulding Ave Chicago 47 Ill (1-3)
 Modern Swimming Pool Co Inc 1 Holland Ave White Plains NY (4)
 Moe Light Div Thomas Industries Inc 207 E Broadway Louisville Ky (1-2-3-5-6-7)
 Moldcast Mfg Co 236 South St Newark 14 NJ (6)
 N L Corp 2480 E 22 St Cleveland 15 Ohio (11-13)
 Nemco Electric Co 210 Second Ave Seattle 4 Wash (1-2-4-6-7-11-12)
 Neo-Ray Products Inc 315 E 22 St NY 10 NY (3)
 Nessen Studio Inc 317 E 34 St New York 16 NY (6-10-12)
 Norty Lighting Corp 4480 E 22 St Cleveland 15 Ohio (11-13)
 Omega Lighting Inc 51 E 42 St New York 17 NY (1-2)
 Osoco Mfg Co P O Box 7268 Ft Worth Tex (11)
 Pacific Electricord Co 747 W Redondo Beach Blvd Gardena Calif (10-12)
 Pass & Seymour Inc Syracuse 9 NY (1-6-7-11)
 Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (4)
 Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville LI NY (10-11-12)
 Pfaff & Kendall B4 Foundry St Newark 5 NJ (15)
 Pittsburgh Reflector Co Oliver Bldg Mellon Square Pittsburgh 22 Pa (3-5)
 Post-O-Lite Inc Route 138 Canton Mass (5-6-11-15)
 Prescolite Mfg Corp 2229 Fourth St Berkeley 10 Calif (1-2-6-7-9-10-11)
 Progress Mfg Co Inc Castor Ave & Tulip St Phila 34 Pa (1-2-3-6-7-11-12)
 Project Fixture Mfg Corp 10 Ranick Dr S Amityville NY (1-2-5-6-7-10-11-12)
 Quaker City Electric Mfg Co 2810 E Pacific St Phila 34 Pa (3)
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (4-11-12)
 Regal-Lite Corp 19 Grosvenor Ave East Providence 14 RI (1-2-6-11-15)
 Rembrandt Lamp Corp 4500 W Division St Chicago 51 Ill (1-2-10)
 Robboy Electric Mfg Co 5900 Euclid Ave Cleveland 3 Ohio (11-12)

Robert Mfg Co 99 Dell Glen Ave Lodi NJ (3-6-77)
 Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (10-14)
 Russell & Stoll Co Inc 125 Barclay St (12)
 Sea Gull Lighting Products Inc 2520 Morris St Philadelphia 45 Pa (2-6-7-11)
 Segal (L J) Co 2500 W North Ave Chicago 47 Ill (1-2-3-11)
 Shalida Mfg Co Inc 156 W Providencia Ave Burbank Calif (12)
 Shaper Lighting Products 2343 Welcome Ave Richmond Calif (1-2-3-4-6-7-11-12-15)
 Solar Sonic Devices Inc Box 65 Hicksville LI NY (9)
 Southeast Lighting Inc 521 E 20 St Charlotte 1 NC (3)
 Special Products Co Chattanooga 6 Tenn (1-2-3-6-7-11-12-15)
 Spero Electric Corp 18222 Lanken Ave Cleveland 19 Ohio (4-11-12)
 Stabrite Fluorescent Mfg Co 3550 Northwest 49 St Miami Fla (1-3-11)
 Steber Div Pyle-National Co 2700 Roosevelt Rd Broadview Ill (11-12)
 Sternberg Mfg Co 4510 Addison St Chicago 41 Ill (11)
 Stocker & Yale Inc Green St Marblehead Mass (10)
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (1-2-4-6-11-2-16)
 Swing-O-Lite Inc 13 Moonachie Rd Hackensack NJ (10)
 Swiveler Co Inc Nanuet NY (1-2-3-5-6-7-10-11-12-14)
 Sylvania Electric Products Inc 730 Third Ave New York 19 NY (1-2)
 Tolen (William) & Son Inc 4041 Ridge Ave Philadelphia Pa (10)
 Tower Craftsmen Inc 105 Chestnut St Red Bank NJ (10)
 Triboro Electric Corp 110 Waterberry Brooklyn 6 NY (4)
 Trippie Mfg Co 133 N Jefferson St Chicago 6 Ill (11-12)
 Trojan Lighting Co 663 State St San Diego Calif (1)
 Ultra-Violet Products Inc 5114 Walnut Grove Ave San Gabriel Calif (16)
 Union Insulating Co Inc Box 351 Parkersburg W Va (4-6-11-15)
 United Lighting & Ceiling Co 2828 Ford St Oakland 1 Calif (5)
 Unlimited Design Lighting 1155 S Robertson Blvd Los Angeles 35 Calif (1-2-6)
 Versen (Kurt) Co 4 Siocum Ave Englewood NJ (1-2-6-10)
 Virden (John C) Co 5009-6103 Longfellow Ave Cleveland 3 Ohio (1-2-3-6-7-11-12)
 Virginia Metalcrafters Inc Waynesboro Va (2-6-10-11)
 Weiss & Biheller Merchandise Corp 40 W 20 St New York 21 NY (1-2-6)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (3-9-11 thru 16)
 White (O C) Sales Co 40 Green St Marblehead Mass (10)
 Wilson (J A) Lighting 2001 Peninsula Dr (P O Box 5037) Erie Pa (1)

Acromark Co 320 Morrell St Elizabeth 4 NJ (18)
 Adaleit Mfg Co 14300 Lorain Ave Cleveland 11 Ohio (8)
 Adjustable Fixture Co 104 E Mason St Milwaukee 2 Wis (1-17)
 Aeronautical Electric Co 5656 Northwest Highway Chicago 30 Ill (12)
 Ainsworth Lighting Inc 38-10 Twenty-Ninth St L I C 1 NY (1-2)
 Alkco Mfg Co 4224 N Lincoln Ave Chicago 18 Ill (1-2)
 All-Brite Light Co 400 S 12 St Reading Pa (2-13)
 Allen & Olsen Mfg Co 4230 Del Rey Ave Venice Calif (2)
 American Fluorescent Corp 1243 N Paulina St Chicago 22 Ill (2)
 Amplex Corp Glen Cove Rd Carle Place Long Island NY (1-13)
 Apollo Lighting Fixture Co Inc 162 W Third St Mt Vernon NY (1-2)
 Appleton Electric Co 1701-59 Wellington Ave Chicago 13 Ill (1-2-3-7-8-9)
 Art Metal Co 1814 E 40 St Cleveland 3 Ohio (1-13)
 Art Metal Lighting Div Wakefield Corp 1814 E 40 St Cleveland 3 Ohio (1-13)
 Artcraft Lighting Co Inc 248 McKibbin St Brooklyn 6 NY (1-2-13)
 Atlas Electric Products Co 319 Ten Eyck St Brooklyn 6 NY (1-2-11)
 B M D & R Inc 7020 Walker St St Louis Park Minneapolis 16 Minn (1-2-16-17-18-19-23)
 Baker-Barkon Co 1335 S W Morrison St Portland Ore (1)
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (1-2-3-7-8-9-10-11-13-17-19-22)
 Betts & Betts Corp Pomeroy Rd Woodbury Conn (11)
 Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (1-2)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (14)
 Canning-Pekara Inc 2144 N Wood St Chicago 14 Ill (2-4-13-21)
 Capital Hardware Mfg Co Inc 400 N Leavitt St Chicago 11 Ill (13)
 Capitol Stage Lighting Co Inc 527 W 45 St New York 36 NY (1-15)
 Carpenter Mfg Co 2250 Gilman Square Somerville 45 Mass (11)
 Ceiling Materials Co 200 Waring Rd Memphis 17 Tenn (10)
 Centralite Co Inc Dayton & Central Aves Cincinnati 14 Ohio (2)
 Century Lighting Inc 521 W 43 St New York 36 NY (1-13-15)
 Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (4-7-8-13)
 Cole (C W) & Co Inc P O Box 3382 Los Angeles 54 Calif (1-2-13-15-21)
 Colonial Electric Products Div Colonial Neon Co Inc 1-115 Market St East Paterson NJ (2)
 Columbia Lighting North 2310 Fancher Way Spokane Wash (2-9-10-13)
 Compco Corp 1800 N Spaulding Ave Chicago 47 Ill (1-2-13-17-18-19-22)
 Condi-Lite Corp 889 Broadway New York 3 NY (1-2)
 Control Switch Div Controls Co of America 4218-30 W Lake St Chicago 24 Ill (12)
 Controls Co of America Control Switch Div 1420 Delmar Dr Folcroft Pa (12)
 Cooper Hewitt Electric Co Inc 720-732 Grand St Hoboken NJ (2-3)
 Crescent Corp 785 Schuykill Ave Philadelphia 46 Pa (2-9-13-17-19-21-22-24)
 ●CROUSE-HINDS CO Syracuse 1 NY (1-2-3-7-8-9-11-13)—ADV PG 4th cover
 Crownlite Fluorescent Co 7 Roselle St Mineola NY (2-10-13)
 Curtis Lighting Div Curtis-All Brite Lighting Inc 6135 W 65 St Chicago 38 Ill (1-2-3)
 Cutler Electrical Products Inc 5524 Haverford Ave Philadelphia Pa (6)
 Cutler-Hammer Inc 228 N 12 Street Milwaukee 1 Wis (12)
 Cutler Light Mfg Co 2026 N 22 St Phila 21 Pa (4-13)
 Day-Brite Lighting Inc 6260 N Broadway St Louis 15 Mo (1-2-8-18)
 Dazor Mfg Corp 4481-99 Duncan Ave St Louis 10 Mo (1-2)
 Derrick Light Inc P O Box 9335 Houston Texas (7-8-9)
 Dialight Corp 60 Stewart Ave Brooklyn 37 NY (11-12)
 DiffRusa-Lite Co 1 Forrest St Conshohocken Pa (10)
 Dixie Controller Inc Post Office Box 5844 Birmingham 9 Ala (12-14-15)
 Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill (6-11-12-13)
 Dual-Lite Co Inc Newtown Conn (14-18)
 Duray Fluorescent Mfg Co 3318 W Montrose Ave Chicago 18 Ill (2)
 Duro-Test Corp 2321 Hudson Blvd North Bergen NJ (1-2-11-13)
 E J S Lighting Corp 321 E Pico Blvd Los Angeles 21 Calif (1)
 Electric Cord Co 432 Plane St Newark 2 NJ (11-14)
 Electric Cord Sales Inc P O Box 1907 Stockton Calif (2-13)
 Electric Re-Light Co Uniman Pl at S Goodman Rochester 20 NY (2)

Electro Lighting Corp 1536 S Paulina St Chicago 8 Ill (1-2-3-10)
 Electro Powerpacs Inc 5 Hadley St Cambridge 40 Mass (14)
 Emerson-Pryne Co Towne Ave at Monterey (P O Box 698) Pomona Calif (1-13)
 Ender-Monarch Corp 141 Lanza Ave Garfield NJ (1-2-4-10-16-17-18-19)
 Everglow Lighting Fixture Co Inc 332 E Jericho Turnpike Huntington Station NY (1-2)
 Fannon (John J) Products Co 3000 E Woodbridge Detroit 7 Mich (10)
 Federal Lighting Corp 1425 Rockwell Ave Cleveland 14 Ohio (1-2)
 ●FEDERAL SIGN & SIGNAL CORP 13626 S Western Ave Blue Island Ill (11)—ADV PG 99
 Flexo International Corp 3720 N Milwaukee Ave Chicago 41 Ill (1-2)
 Fluores-O-Lite Co Evans Terminal North Broad St Hillside 5 NJ (1-2-13)
 Fluorescent Equipment & Mfg Co 5105 Cowan Ave Cleveland 27 Ohio (1-2-13)
 Fluorescent Fixtures of California 352 Shaw Rd South San Francisco Calif (2)
 Frink Corp 211 63rd St Brooklyn 20 NY (1-2-18)
 Frisbie (H C) Co 1120 E Pico Blvd Los Angeles 21 Calif (1)
 Fullerton Mfg Co Willard Rd Norwalk Conn (1-2-10)
 Garcy Lighting Div Garcy Corp 2475 Elston Ave Chicago 47 Ill (1-2-13)
 Gedney Electric Co Americas Bldg Radio City NY 20 NY (8)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-20)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3-7-8-9-11-14-18-19-20)—ADV PG 84-85
 General Indicator Corp Pardeeville Wis (21)
 General Lighting Co 248 McKibbin St Brooklyn 6 NY (1-2-10-13)
 Gibson Mfg Co 1919 Piedmont Circle NE Atlanta Ga (2)
 Globe Lighting Products Inc 1710 Flushing Ave Brooklyn 37 NY (1-2-13)
 ●GOOD MFG CO INC 1015 N Halsted St Chicago 22 Ill (2)—ADV PG 102
 Gotham Lighting Corp 37-01 31st St Long Island City 1 NY (1-2-10-17-19-22)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-2)—ADV PG 2
 Grayco Products 3830 N Kedzie Chicago 18 Ill (2-15-17-18-24)
 Great Northern Mfg Corp 1056 N Wood St Chicago 22 Ill (2-13)
 Gruber Bros Inc 90 S First St Brooklyn 11 NY (1-2-9-13)
 Guth (Edwin F) Co 2615 Washington Blvd St Louis 77 Mo (1-2-3-9-13-15-18)
 Hadco Aluminum Products Co P O Box 128 Littlestown Pa (23)
 Halo Lighting Products Inc 4201 Grand Ave Chicago 51 Ill (1-8-17-18)
 Hampden Engineering Corp 99 Shaker Rd East Longmeadow Mass (14)
 Hascos Electric Corp 84 S Water St Byram Conn (1-2-10-13-19)
 Holophane Co Inc 342 Madison Ave New York 17 NY (1-2-3-8-9-10)
 House-O-Lite Corp 5700 S Perry Ave Chicago 21 Ill (2-13-14)
 Hub Electric Co 2255 W Grand Ave Chicago 12 Ill (1-2-11-15-17)
 Illuminating Engineering Co 2347 East Nine Mile Rd Hazel Park Mich (4)
 Industrial Devices Inc Edgewater 19 NJ (12)
 Infra Corp 66 S Main Clarkston Mich (18)
 Integrated Ceilings & Grilleworks Inc 11766 W Pico Blvd Los Angeles 64 Calif (10)
 International Lighting Mfg Co 1825 N 19 St Louis 6 Mo (1-2)
 Jackson Electrical Co 900 W Van Buren St Chicago 7 Ill (1-8-9)
 Jay Lighting Mfg Co Inc 23-29 Quincy St Brooklyn 38 New York (1)
 Jogan Industries P O Box 254 San Lorenzo Calif (14)
 Joleco Corp 2513 Baldwin St St Louis 6 Mo (1-2-21)
 Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio (8-9)
 K-B Lighting Mfg Co 2101 Byberry Rd Phila 16 Pa (2-10-21)
 Kalsan Electric Co Inc 146 Mott St Oceanside LI NY (1-2-11-13)
 Kayline Co 1241 E 45 St Cleveland 14 Ohio (1-2)
 Kelly Specialty Co 5958-60 Washington Blvd Chicago 44 Ill (2-11-18)
 Kenbert-Arpag Co 220 Coster St Bronx 59 NY (1-2)
 Kent Lighting Corp 500 Johnson Ave Brooklyn 37 NY (1-2-8-9-10-13-18-21)
 Keystone Electric Mfg Co 2228 E Tioga St Phila 34 Pa (2-13)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1-3-7-8-9-12)
 Kirkland (H R) Co 8 King St Morristown NJ (11-12)
 Kirin Co 3435 E Jefferson Ave Detroit 7 Mich (1-2-16-17-18-19)
 Kilegal Bros Universal Electric Stage Lighting Co Inc 321 W 50 St NY 19 NY (1-2-14-15-16-18)
 Klilgite Mfg Co 6822 Lynford St Philadelphia Pa (2-13)
 Koch & Lowry Inc 201 E 34 St New York 16 NY (1)

9C. COMMERCIAL, INSTITUTIONAL & INDUSTRIAL LIGHTING EQUIPMENT

1. Incandescent fixtures
2. Fluorescent fixtures
3. Mercury & sodium vapor fixtures
4. Cold cathode fixtures
5. Arc lighting equipment
6. Neon lighting
7. Explosion-proof fixtures
8. Vaporproof fixtures
9. Dust-tight fixtures
10. Complete luminous ceiling systems
11. Warning lights
12. Pilot & indicating light assemblies
13. Showcase & display lighting
14. Emergency lighting unit & systems
15. Stage lighting
16. Church lighting
17. Hospital lighting
18. Exit lights
19. Public building lighting
20. Battery-operated fluorescent fixtures
21. Lighted display & directional signs
22. High-bay lighting
23. Ornamental lighting
24. Ultra-violet display lighting

See also "Outdoor Lighting".

Abolite Lighting Div Jones Metal Products Co West Lafayette Ohio (1-3-22)
 Acme Lighting & Mfg Co 949 E 31 St Los Angeles 11 Calif (2-13)

Kord (Leonard E) Co 2751 N Emerson Ave Indianapolis 18 Ind (1-2-16)
 Kurtzon (Moris) Inc 1420 S Talman Ave Chicago 8 Ill (1-2-11-13)
 LAM Inc 414 Main St Wakefield Mass (1-2-16-17-19)
 L & P Lighting Box 157 Olive Branch Miss (2-10-13-16)
 Larco Inc 30 S Park Pl Painesville Ohio (9-11)
 Leecraft Mfg Co Inc 21-16 44th Rd Long Island City 1 NY (12)
 Legion Lighting Co 221 Glenmore Ave Brooklyn 7 NY (1-2-10-17-19)
 Light O'Day Mfg Inc 15801 Livernois Detroit 38 Mich (2-13-17-19-22)
 Lightalarms Electronics Corp 10 W Houston St New York 12 NY (7-14-15-17-18-19)
 Lighting Dynamics Inc 300 N Baldwin Park Blvd City of Industry Calif (1-2-13)
 Lighting Products Inc 1549 Park Ave West Highland Park Ill (12)
 Lightmore Appliance Corp 76-09 34th Ave Jackson Heights 7 NY (21)
 Lightoller Inc 346 Claremont Ave Jersey City 5 NJ (1-2)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1-2)
 Litecontrol Corp 36 Pleasant St Watertown 72 Mass (2-10-13)
 Litecraft Mfg Corp 100 Dayton Ave Passaic NJ (1-2-9-10-13)
 Lithonia Lighting Products Co Box 206 Conyers Ga (2-13)
 Lok-Products Co 5109 San Fernando Rd West Los Angeles 39 Calif (2)
 Lumi Dyne Corp 627-39 Banning St Los Angeles 12 Calif (10)
 Luminator Inc 120 N Peoria St Chicago 7 Ill (19)
 Luminous Ceilings Inc 3701 N Ravenswood Ave Chicago 13 Ill (2-10-13)
 Luxo Lamp Corp Dock St Port Chester NY (17)
 Luxor Lighting Products Inc 350 5th Ave New York 1 NY (1-2-3)
 Magni Flood Inc 50 Cray Ave Mt Vernon NY (13)
 Major Equipment Co Inc 4603 W Fullerton Ave Chicago 39 Ill (15)
 Manning (R A) Co Inc 1810 North Ave Sheboygan Wisc (1-12-16-18-19-23)
 Marco Industries 207 S Helena St (P O Box 110) Anaheim Calif (12)
 Markstone Mfg Co 1531 N Kingsbury Chicago 22 Ill (1-2)
 Marlow Lights Inc Fanwood NJ (2)
 Marvel Lamp Co 307 Newark St Hoboken NJ (2)
 Masterlite Mfg Co 2758 Kensington Ave Phila Pa (2)
 McDermott (Julian A) Corp 1639 Stephen St Ridgewood 27 NY (11-14-20)
 McFadden Lighting Co Inc 128 E Kraus St St Louis 11 Mo (16-18-23)
 McPhibben Mfg Co Inc 1329 Willoughby Ave Brooklyn 37 NY (1-2-3-8-16-17-18-19-22)
 Meierjohan-Wengler 1102 W 9th St Cincinnati 3 Ohio (1-16-19-23)
 Melrose Lighting Co Inc Fort Washington Industrial Park Fort Washington Pa (2)
 Metalcraft Products Co Inc 6225 State Rd Philadelphia 35 Pa (2)
 Metrolite Mfg Co 1000 N Division St Peekskill NY (16-19)
 Mid-West Chandelier Co 15th & Gentry (P O Box 7365) North Kansas City 16 Mo (2-13)
 Midwest Lighting Products Co P O Box 536 Edge-water Branch Cleveland 7 Ohio (1)
 Miller Co Illuminating Div 99 Center St Meriden Conn (1-2-3-8-9)
 Miroflector Co Inc 40 Bayview Ave Inwood LI NY (1-13-15)
 Mitchell Lighting Div Compco Corp 1800 N Spaulding Ave Chicago 47 Ill (1-2-13-17-18-19-22)
 Modern Light Co Inc 7809 Maplewood Industrial Court St Louis 17 Mo (2-10)
 Modern Light & Equipment Co 3812 S Wabash Ave Chicago 53 Ill (1-2-17-19)
 Moldcast Mfg Co 236 South St Newark 14 NJ (1-3)
 Mole-Richardson Co 937 N Sycamore Ave Hollywood 38 Calif (5)
 ●MULTI ELECTRIC MFG INC 4223 W Lake St Chicago 24 Ill (1-2-3-8-9)—ADV PG 118
 N L Corp 2480 E 22 St Cleveland 15 Ohio (1)
 Natale Machine & Tool Co 339 Highway #17 Carlstadt NJ (1)
 National Cathode Corp 317 E 34 St New York 16 NY (4-10)
 Nemco Electric Co 210 Second Ave Seattle 4 Wash (1-2-11-13)
 Neo-Ray Products Inc 315 E 22 St NY 10 NY (1-2-10-13-15)
 Nepco Mfg Co 4230 N Sayre Chicago 34 Ill (13)
 Nicad Div Gould-National Batteries Inc East-hampton Mass (14)
 Noel Mfg Co 3 W 18 St New York 11 NY (1)
 Northern Incandescent Lamp Co 1 Newark St Hoboken NJ (1)
 Northern Light Co 1661 N Water St Milwaukee 2 Wis (2-10-13)
 Nu-Art Lighting & Mfg Co 2360 West 21 South Salt Lake City 4 Utah (2-22)
 Omega Lighting Inc 51 E 42 St New York 17 NY (1-22)
 Overbagh & Ayres Mfg Co 411 S Clinton St Chicago 7 Ill (1-8)

Palco Mfg Co 1260 Pennsylvania Ave San Francisco 7 Calif (17)
 Paramount Industries Inc G-1080 Ballanger Rd Flint 4 Mich (2-8-10-11-13)
 Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (8-9-11)
 Penetray Corp 615 Front St Toledo 5 Ohio (1-13-15)
 Penn (W M) Fluorescent Light Mfg Co 426 E Allegheny Ave Philadelphia 34 Pa (2-13)
 Perfectlite Co 1457 E 40 St Cleveland 3 Ohio (1-8-17-18-19)
 Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville LI NY (8-9-13)
 Perkins Battery Co 214 Golden Lane New Oxford Pa (14)
 Phillips (Oscar) Corp 9701 Reading Rd (Box 21) Cincinnati 15 Ohio (2)
 Pittsburgh Reflector Co Oliver Bldg Mellon Square Pittsburgh 22 Pa (1-2-10-13)
 Portable Light Co Inc 65 Passaic Ave Kearny NJ (11-14)
 Prescolite Mfg Corp 2229 Fourth St Berkeley 10 Calif (1-2-13-18)
 Price Bros Inc 4301 W Madison St Chicago 24 Ill (11)
 Project Fixture Mfg Corp 10 Ranick Dr S Amityville NY (1-11)
 Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (7-8-9-11-12)
 Quadrangle Mfg Co 32 S Peoria St Chicago 7 Ill (1-3-8-9-11-13-22)
 Quaker City Electric Mfg Co 2810 E Pacific St Phila 34 Pa (2-13)
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (7-8)
 Rambusch Decorating Co 40 W 13 St New York 11 NY (1-16-23)
 Revere Electric Mfg Co 7420 N Lehigh Ave Chicago 48 Ill (1-2)
 Robert Mfg Co 99 Dell Glen Ave Lodi NJ (2-9)
 Ruby-Philite Corp 32-02 Queens Blvd L I C I NY (1-2)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (7-8-9)
 Scranton Storage Battery Corp Archbald Pa (14)
 Segal (L J) Co 2500 W North Ave Chicago 47 Ill (2-13)
 Sentry-Lite & Battery Div Hobby & Brown Electronic Corp 237 Sunrise Highway Rockville Centre NY (14)
 Shalda Mfg Co Inc 156 W Providencia Ave Burbank Calif (1-3-8-9-11-13-14)
 Shaper Lighting Products 2343 Welcome Ave Richmond Calif (1-2-16-17-19-23)
 Silvray Lighting Inc 100 W Main St Bound Brook NJ (1-2-10-13)
 Simes Co Inc 114 15th Ave College Point LI NY (3-8-9-11-17)
 Simmonds Precision Products Inc Tarrytown NY (11-12)
 Sireno Signal Mfg Corp 65 Passaic Ave Kearny NJ (11)
 Smithcraft Corp 217 Everett Ave Chelsea 50 Mass (2-10)
 Smoot-Holman Co 321 N Eucalyptus Ave (P O Box 4097) Inglewood Calif (1-2-3-8-22)
 Solar Light Mfg Co 1990 Mannheim Rd Melrose Park Ill (1-2)
 Solux Corp 58-17 28th Ave Woodside 77 LI NY (1-2-8-11-13)
 Southeast Lighting Inc 521 E 20 St Charlotte 1 NC (2)
 Special Products Co Chattanooga 6 Tenn (1-2-13-16-17)
 Spero Electric Corp 18222 Lanken Ave Cleveland 19 Ohio (1-3-8-22)
 Spincraft Inc 4122 W State St Milwaukee 8 Wis (13)
 Stabrite Fluorescent Mfg Co 3550 Northwest 49 St Miami Fla (1-2-13)
 Stamford Metal Specialty Co Inc 429 W Broadway New York 12 NY (1-2-21)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (14)
 Standard Portable Cord Co Inc Mayville NY (14)
 Steber Div Pyle-National Co 2700 Roosevelt Rd Broadway Ill (1-8-13-22)
 Sternberg Mfg Co 4510 Addison St Chicago 41 Ill (1-16)
 Stetson Mfg Co 1223 Circle Ave Forest Park 1 Ill (13-23)
 Stocker & Yale Inc Green St Marblehead Mass (2-9-13)
 Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (1-3-8-9-11-13-14-15-18-19-22-24)
 Sun-Lite Mfg Co 2555 Bellevue Ave Detroit 7 Mich (1-2-13)
 Sunbeam Lighting Co 777 E 14 Pl Los Angeles 21 Calif (1-2-13-17)
 Superior Electric Co 383 Middle St Briston Conn (15)
 Supreme Lighting Co 600 E Turner St Los Angeles Calif (1-2)
 Surrrette Storage Battery Co Inc Jefferson Ave Salem Mass (14)
 Suttle Equipment Corp 135 S LaSalle St Chicago 3 Ill (12)
 Swedish Iron & Steel Corp 910 Westfield Ave Elizabeth NJ (2-4)
 Swing-O-Lite Inc 13 Moonachie Rd Hackensack NJ (13-17)
 Swiveller Co Inc Nanuet NY (1-2-13-15-16-17-19-22)
 Sylvania Electric Products Inc 730 Third Ave New York 19 NY (1-2-12)
 Tedcar Products Co Box 1209 Union NJ (11)

Terado Corp 1068 Raymond Ave St Paul 8 Minn (10)
 Tod Lite Inc 3401 NW 10th St Oklahoma City Okla (14)
 Transolite Corp 515 Madison Ave New York 36 NY (2)
 Tri-Part Mfg Co 359 E Jessie St (P O Box 178) Pontiac Mich (2-8-13)
 Triplex Mfg Co 133 N Jefferson St Chicago 6 Ill (11)
 Trojan Lighting Co 663 State St San Diego Calif (1)
 U-C-Lite Mfg Co 1050 W Hubbard St Chicago 22 Ill (11)
 Ultra-Violet Products Inc 5114 Walnut Grove Ave San Gabriel Calif (24)
 Union Insulating Co Inc Box 351 Parkersburg W Va (1-8-9)
 United Lighting & Ceiling Co 2828 Ford St Oakland 1 Calif (10-19)
 United States Radium Corp Hanover Ave Morristown NJ (11-12-14)
 Unlimited Design Lighting 1155 S Robertson Blvd Los Angeles 35 Calif (1-16-17)
 V V Fitting Co P O Box 1253 Merchantville NJ (8-9)
 Versen (Kurt) Co 4 Slocum Ave Englewood NJ (1-13-17)
 Virden (John C) Co 5009-6103 Longfellow Ave Cleveland 3 Ohio (2)
 Virginia Metalcrafters Inc Waynesboro Va (23)
 Voigt Co 1636 N Carlisle St Phila 21 Pa (16-18-19-23)
 Wakefield Lighting Div Wakefield Corp 731 S Water St Vermilion Ohio (1-2-10)
 Webb Electric Mfg Co 1701 SW Jefferson St Portland 1 Ore (1)
 Weiss & Bieller Merchandise Corp 40 W 20 St New York 11 NY (1)
 Wellmade Metal Products Co 860 81st Ave Oakland 21 Calif (2-10)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 13-15-16-17-19-22-23-24)
 Westinghouse Electric Corp Lighting Div 1216 W 58th St (P O Drawer 5817) Cleveland 1 Ohio (1-2-3-9)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-3-8-9-14 thru 19)—ADV PG 2nd cover
 Weston Corp 652 Hudson St NY 14 NY (2)
 Wheeler Reflector Co 275 Congress St Boston 10 Mass (1-2-3-8-9-13)
 White (O C) Sales Co 40 Green St Marblehead Mass (1-2)
 Wide-Lite Corp P O Box 191 Houston 1 Tex (3-8-9-22)
 Wiley (R & W) Inc Dearborn & Bridge St Buffalo 7 NY (2)
 Williams (H E) Products Co 106 S Main St Carthage Mo (2-13)
 Wilmot Castle Co Box 629 Rochester 2 NY (7-17)
 Wilson (J A) Lighting 2001 Peninsula Dr (P O Box 5037) Erie Pa (10)
 Wiremold Co Hartford 10 Conn (13)
 Woodward Machine Co Lighting Div 4833 Elm-hurst Detroit 4 Mich (8-9)
 Work-O-Lite Co 522 Cortlandt St Belleville 9 NJ (2-13)

9D. OUTDOOR LIGHTING EQUIPMENT

1. Airport lighting
2. Floodlights
3. Beacons & searchlights
4. Spotlights
5. Street & highway lighting
6. Lighting towers, poles & standards
7. Sign lighting
8. Obstruction lighting
9. Traffic signals & controls
10. Service station lighting
11. Marine lighting
12. Underwater lighting
13. Parking and area lighting
14. Bridge lighting
15. Underwater lighting, low-voltage

Equipment manufactured for specialized commercial and residential applications. Residential outdoor lighting is included in Residential Lighting, Sec. 9A.

Abolite Lighting Div Jones Metal Products Co West Lafayette Ohio (2)
 Afco Lite Corp 1378 N Wolcott Chicago 22 Ill (2)
 Alexander-Tagg Industries Inc Jacksonville Road at Summit Ave Harbor Pa (4)
 Allen & Olsen Mfg Co 4230 Del Rey Ave Venice Calif (10)

American Concrete Div Union Metal Mfg Co Dah-
ringer Rd Waukegan Ill (6)
Anthony Lighting Corp 400 S Desplaines Ave For-
est Park Ill (2-4-5-6-7-10-12-13)
Appleton Electric Co 1701-59 Wellington Ave Chi-
cago 13 Ill (2)
Art Metal Lighting Div Wakefield Corp 1814 E
40 St Cleveland 3 Ohio (2-4)
B M D & R Inc 7020 Walker St St Louis Park
Minneapolis 16 Minn (13)
Beckley Electric Co Inc 468-470 Grand Ave Brook-
lyn 38 NY (2-4)
Bel-Aqua Pool Supply Inc 750 Main St New
Rochelle NY (12)
Benjamin Div Thomas Industries Inc 207 E Broad-
way Louisville 2 Ky (2-7-10-11)
Blackhawk Industries 250 S Main St Dubuque
Iowa (8)
Bryant Electric Co 1421 State St (Box D Barnum
Stal) Bridgeport 2 Conn (1-2-7-10-13)
Canning-Pekara Inc 2144 N Wood St Chicago 14
Ill (7)
Carpenter Mfg Co 2250 Gilman Square Somerville
45 Mass (8)
Cold Cathode Lighting Corp 76 S Bayles Ave Port
Washington NY (5)
Cole (C W) & Co Inc P O Box 3382 Los Angeles 54
Calif (4)
Colonial Electric Products Div Colonial Neon Co
Inc 1-115 Market St East Paterson NJ (5-6-
10-13)
Columbia Lighting North 2310 Fancher Way Spo-
kane Wash (2-7-10)
Compco Corp 1800 N Spaulding Ave Chicago 47
Ill (1-2-5-6-7-10)
Cope (T J) Div Rome Cable Corp Third & Walnut
Sts Collegeville 5 Pa (5)
Crescent Mfg Co 785 Schuykill Ave Philadelphia
46 Pa (7)
●CROUSE-HINDS CO Syracuse 1 NY (1 thru 5)—
ADV PG 4th cover
Cutter Electrical Products Inc 5524 Haverford Ave
Philadelphia Pa (7)
Derrick Light Inc P O Box 9335 Houston Texas
(2)
Dryomatic Co 715 N Fayette St (P O Box 591)
Alexandria Va (9)
Duro-Test Corp 2321 Hudson Blvd North Bergen
NJ (2-4)
Electric Lighting Sales Inc P O Box 1907 Stockton
Calif (5-10)
Electro Lighting Corp 1536 S Paulina St Chicago
8 Ill (2-4)
Elreco Corp 2000 Central Ave Cincinnati 14 Ohio
(6)
Emarco Corp 1950 Neva Drive Dayton 14 Ohio
(8)
Ender-Monarch Corp 141 Lanza Ave Garfield NJ
(14)
Ferry Mfg Co Inc 3116 Spring Garden St Phila-
delphia 4 Pa (2)
General Electric Co Industrial Sales Operation
1 River Road Schenectady 5 NY (1 thru 15)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave
Bridgeport Conn (1-2-4 thru 8-10-13)—ADV PG
84-85
General Lighting Co 248 McKibbin St Brooklyn 6
NY (16)
Globe Lighting Products Inc 1710 Flushing Ave
Brooklyn 37 NY (4)
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY (1-3-5)—ADV PG 2
Great Northern Mfg Corp 1065 N Wood St Chicago
22 Ill (2-5)
Guardian Light Co 500 N Blvd Oak Park Ill
(1-2-5-6-7-10-13-14)
Gulf Swimming Pool Equipment Co 8623 N New
Braunfels Ave San Antonio Tex (12)
Guth (Edwin F) Co 2615 Washington Blvd St
Louis 77 Mo (2)
Hadco Aluminum Products Co P O Box 128 Lit-
tlestown Pa (13)
Hi Products Inc 7700 Wentworth Ave South Min-
neapolis 23 Minn (5)
●HOUSE-PHANE CO INC 342 Madison Ave New York
17 NY (2-5)—ADV PG 3rd cover
House-O-Lite Corp 5700 S Perry Ave Chicago 21
Ill (2-4)
Hub Electric Co 2255 W Grand Ave Chicago 12
Ill (4)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa
(1-2-5)
Hughey & Phillips Inc 3200 North San Fernando
Blvd Burbank Calif (8)
Hutchison Mfg Co 6609 Avenue U (P O Box 9335)
Houston 11 Tex (2)
Jackson Electrical Co 900 W Van Buren St Chi-
cago 7 Ill (2-4-13)
Joslyn Mfg & Supply Co 3700 S Morgan St Chi-
cago 9 Ill (5)
Joy Mfg Co Electrical Products Div 338 S.
Broadway New Philadelphia Ohio (12-15)
Joy Mfg Co H W Oliver Bldg Pittsburgh 22 Pa
(2)
K-B Lighting Mfg Co 2101 Byberry Rd Phila 16
Pa (2)
Kalsan Electric Co Inc 146 Mott St Oceanside
LI NY (4)
Kayline Co 1241 E 45 St Cleveland 14 Ohio (4)
Kenworth Co Winsted 1 Minn (2)
Kerrigan Iron Works Co 1033 Herman St Nash-
ville 2 Tenn (5-6-10-13-14)
Kilark Electric Mfg Co 3940 Easton Ave St
Louis 13 Mo (4)
Klm Lighting & Mfg Co Inc 1467 N Lidcombe
Ave El Monte Calif (11-12-13)
Kilegi Bros Universal Electric Stage Lighting Co
Inc 321 W 50 St NY 19 NY (2-4)

Kord (Leonard E) Co 2751 N Emerson Ave
Indianapolis 18 Ind (6-13)
Kuehn Mfg Co 78-80 Shipman St Newark 2 NJ
(2-4-13)
Legion Lighting Co 221 Glenmore Ave Brooklyn 17
NY (1-2-4-7-10-13-14)
Line Material Industries McGraw-Edison Co 700
W Michigan St Milwaukee Wis (1-2-3-5-13)
Luminator Inc 20 N Peoria St Chicago 7 Ill (1-
5-13-14)
Luxor Lighting Products Inc 350 5th Ave New
York 1 NY (2-4-10-13)
Magni Flood Inc 50 Crary Ave Mt Vernon NY (2)
Manning (RA) Co Inc 1810 North Ave Sheboygan
Wis (2)
Marbelite Co Inc 179 N 10 St Brooklyn 11 NY
(9)
Marine Electric Co 195 Fremont San Francisco
Calif (11)
Metalcraft Products Co Inc 6225 State Rd Phila-
delphia 35 Pa (13)
McDermott (Julian A) Corp 1639 Stephen St
Ridgewood 27 NY (1-8)
McPhibben Mfg Co Inc 1329 Willoughby Ave
Brooklyn 37 NY (1-4-6-7-11-13-14)
Meyer Machine Inc Red Wing Minn (6)
Midwest Lighting Products Co P O Box 536 Edge-
water Branch Cleveland 7 Ohio (2)
Millerbernd Mfg Co Winsted Minn (5-6)
MiroFlector Co Inc 40 Bayview Ave Inwood LI
NY (2-4)
Mitchell Lighting Div Compco Corp 1800 N
Spaulding Ave Chicago 47 Ill (1-2-5-6-7-13)
Modern Pool Products Inc 1 Holland Ave White
Plains NY (12)
Moldcast Mfg Co 236 South St Newark 14 NJ
(2-13)
●MULTI ELECTRIC MFG INC 4223 W Lake St
Chicago 24 Ill (1-2-4)—ADV PG 118
Natale Machine & Tool Co 339 Highway #17
Carlstadt NJ (2-4)
National Cathode Corp 317 E 34 St New York
16 NY (13)
Nepo Mfg Co 4230 N Sayre Chicago 34 Ill (2-5)
Nu-Art Lighting & Mfg Co 2360 West 21 South
Salt Lake City 4 Utah (2-4-5-6-7-10-11-13-14)
Overbagh & Ayres Mfg Co 411 S Clinton St Chi-
cago 7 Ill (2)
Pauluhn Electric Mfg Co Inc 422 Broome St
New York 13 NY (1-2-4-8-11)
Penetray Corp 615 Front St Toledo 5 Ohio (2)
Perfect-Line Mfg Corp Old Country Rd & Railroad
Ave P O Box 65 Hicksville LI NY (2-4)
Petelco Inc 2700 Roosevelt Rd Broadview Ill
(2-6-7-10-13)
Pfaff & Kendall 84 Foundry St Newark 5 NJ
(1-5-6-13)
Philadelphia Electrical & Mfg Co 1200-36 N 31 St
Phila 21 Pa (2-5-10-13)
Phillips (Oscar) Co 9701 Reading Rd (Box 21)
Cincinnati 15 Ohio (2-10)
Pittsburgh Reflector Co Oliver Bldg Mellon Square
Pittsburgh 12 Pa (2-4)
Poolquip Inc 5620 New Peachtree Rd Chamblee
Ga (12-15)
Portable Light Co Inc 65 Passaic Ave Kearny
NY (2-3-4)
Project Fixture Mfg Corp 10 Ranick Dr S Amity-
ville NY (4)
Pyle-National Co 1344 N Kostner Ave Chicago 51
Ill (2)
Quadrangle Mfg Co 32 S Peoria St Chicago 7
Ill (2-7-13)
Rab Electric Mfg Co Inc 605 E 132 St New
York 54 NY (2-4)
Ray-O-Vac Co 212 E Washington Ave Madison 10
Wis (9-11-12)
Revere Electric Mfg Co 7420 N Lehigh Ave Chicago
48 Ill (1-2-4-5-6-7-8-10-13)
Rodalie Mfg Co Inc 6th & Minor Sts Emmaus Pa
(2-4)
Rostan Corp 101 Varick Ave Brooklyn 37 NY (6)
Rusgreen Mfg Co 14262 Birwood Ave Detroit 38
Mich (5)
Russell & Stoll Co Inc 125 Barclay St New York 7
NY (11 thru 15)
Ryther Purdy Lumber Co Inc 501 Tiffany St New
York 59 NY (6)
Shalda Mfg Co Inc 156 W Providencia Ave Bur-
bank Calif (2-4)
Shaper Lighting Products 2343 Welcome Ave Rich-
mond Calif (13-14)
Silvray Lighting Inc 100 W Main St Bound
Brook NJ (13)
Simes Co Inc 114 15th Ave College Point LI
NY (2-4-5-6-9-11 thru 15)
Sireno Signal Mfg Corp 65 Passaic Ave Kearny
NJ (3-4)
Smoot-Holman Co 321 N Eucalyptus Ave (P O
Box 4097) Inglewood Calif (2)
Solar Light Mfg Co 1990 Mannheim Rd Melrose
Park Ill (2)
Spero Electric Corp 18222 Lancken Ave Cleveland
19 Ohio (2-4-6-10-13-14)
Stabrite Fluorescent Mfg Co 3550 Northwest 49
St Miami Fla (2)
Stebber Div Pyle-National Co 2700 Roosevelt Rd
Broadview Ill (2-4)
Stern Industries Winsted 1 Minn (2)
Stonco Electric Products Co 333 Monroe Ave
Kenilworth NJ (1-2-4-7-8-10 thru 15)
Sunbeam Lighting Co 777 E 14th Pl Los Angeles
21 Calif (5)
Swivelier Co Inc Nanuet NY (2-4-7-13)
Thompson Electric Co P O Box 873 Cleveland 22
Ohio (5)

Tod-Lite Inc 3401 N W 10 St Oklahoma City
Okla (4)
●UNION METAL MFG CO 1432 Maple Ave N E Can-
ton 5 Ohio (6)—ADV PG 117
Utilities Service Co Grape & 7th St Allentown
Pa (5)
Valley Mfg Co Valley Neb (5-6-10-13-14)
Van Brunt Electric & Mfg Co Inc 252-254 Van
Brunt St Brooklyn 31 NY (11)
Wallace & Tiernan Inc 25 Main St Belleville
NJ (1-11-14)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1 thru 6-10-11-12-13-15)
Westinghouse Electric Corp Lighting Div 1216
W 58th (P O Drawer 5817) Cleveland 1 Ohio
(1-2-5)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gate-
way Center (Box 448) Pittsburgh 30 Pa (1-2-
3-4-5)—ADV PG 2nd cover
Wheeler Reflector Co 275 Congress St Boston 10
Mass (2-5)
Wide-Lite Corp P O Box 191 Houston 1 Tex
(2-5-13)
Wiley (RAW) Inc Dearborn & Bridge St Buffalo
7 NY (4)
Woodward Machine Co Lighting Div 4833 Elm-
hurst Detroit 4 Mich (2)
Work-O-Lite 522 Cortlandt St Belleville 9 NJ
(2)

9E. PORTABLE LIGHTING EQUIPMENT

1. Machine & bench lights
2. Extension cord & lamp
3. Extension cord & lamp with transformer
4. Reel-type extension lamp
5. Emergency lights
6. Inspection lights
7. Trouble light handles & guards
8. Explosion-proof hand lamps
9. Vaporproof hand lamps
10. Rechargeable hand lamps
11. Mobile working lights
12. Illuminated magnifiers

For portable lamps for residential use see
"Residential Lighting."

A K Electric Corp 231 Front St Brooklyn 1 NY
(1-2-5-7)
●ADJUSTABLE FIXTURE CO 104 E Mason St Mil-
waukee 2 Wis (1)—ADV PG 120
Aero-Motive Mfg Co 1803 Alcott St Kalamazoo 24
Mich (6)
Benjamin Div Thomas Industries Inc 207 E
Broadway Louisville 2 Ky (1)
Benjamin Electric Mfg Co Northwest Highway &
Seegers Rd Des Plaines Ill (1-2)
Benjamin Reel Products Inc 10700 Broadway
Cleveland 25 Ohio (7)
Bright Star Industries 600 Getty Ave Clifton NJ
(5)
Bryant Electric Co 1421 State St (Box D Barnum
Stal) Bridgeport 2 Conn (5)
Burton Mfg Co 2520 Colorado Ave Santa Monica
Calif (1)
Carpenter Mfg Co 2250 Gilman Square Somerville
45 Mass (5)
Columbia Wire & Supply Co 2850 Irving Park
Rd Chicago 18 Ill (2)
Commercial Reflector & Mfg Co 3109 Maple Ave
Los Angeles 11 Calif (6)
Compco Corp 1800 N Spaulding Ave Chicago 47
Ill (2)
Cooper Hewitt Electric Co Inc 720-732 Grand St
Hoboken NJ (6)
Cordomatic Corp 1724 W Indiana Ave Philadel-
phia 32 Pa (2-4-7)
Crouse-Hinds Co Syracuse 1 NY (1-2)
Day-Ray Products Inc 1133 Mission St South
Pasadena Calif (2-3-8-9)
Dazor Mfg Corp 4481-99 Duncan Ave St Louis 10
Mo (1-6-12)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza
South Long Island City 1 NY (2-6-7)
Electra Mfg Co 4051 Broadway Kansas City Mo
(5)
Electric Cord Co 432 Plane St Newark 2 NJ
(5-10)
Electro Powerpacs Inc 5 Hadley St Cambridge 40
Mass (5)
Ericson Mfg Co 1660 Hayden Ave Cleveland 12
Ohio (2-3-4-6-7-8-9)
Ferry Mfg Co Inc 3116 Spring Garden St Phila-
delphia 4 Pa (1-2-4-7)
Flex International Corp 3720 N Milwaukee Ave
Chicago 41 Ill (1)
Fostoria Corp N Main St Fostoria Ohio (1)
Gardner Products Co Div Detroit Industrial Products
Co 15244 Aubrey Detroit 39 Mich (1)
General Industries Inc 34529 Ford Rd Garden City
Mich (1-2-7)

Gulton Industries Inc Alkaline Battery Div Metuchen NJ (5-10)
Hutchison Mfg Co 6609 Avenue U (P O Box 9335) Houston 11 Tex (9)
Hykon Mfg Co 163 E State St (P O Box 923 EP) Alliance Ohio (4)
Industrial Electric Reels Inc 1509 Chicago St Omaha 2 Neb (4)
Jogan Industries P O Box 254 San Lorenzo Calif (5)
Joy Mfg Co Electrical Products Div 338 S Broadway New Philadelphia Ohio (2-3-7-9)
Joy Mfg Co H W Oliver Bldg Pittsburgh 22 Pa (2-3)
Koch & Lowy Inc 201 E 34 St New York 16 NY (4)
Koehler Mfg Co 395 Lincoln St Marlboro Mass (5)
Luxe Lamp Corp Dock St Port Chester NY (1-6-11)
Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (6-8-9)
McDermott (Julian A) Corp 1639 Stephen St Ridgewood 27 NY (5)
McGill Mfg Co Inc Valparaiso Ind (2-3-7-9)
Michigan Fluorescent Light Div 393 Orchard Lake Ave Pontiac Mich (1)
Murray (D A) Co Inc 632 N Mill St Tipton Ind (2)
Natale Machine & Tool Co 339 Highway #17 Carlstadt NJ (2)
Pacific Electricord Co 747 W Redondo Beach Blvd Gardena Calif (7)
Pauluhn Electric Mfg Co Inc 422 Broome St New York 13 NY (9)
Project Fixture Mfg Corp 10 Ranick Dr S Amityville NY (2)
Pyle-National Co 1344 N Kostner Ave Chicago 51 Ill (2)
Robboy Electric Mfg Co 5900 Euclid Ave Cleveland 3 Ohio (1)
Rodale Mfg Co Inc 6th & Minor Sts Emmaus Pa (2-7)
Royal Electric Corp 95 Grand Ave Pawtucket RI (2)
Russell & Stoll Co Inc 125 Barclay St New York 7 NY (8-9)
Sireno Signal Mfg Corp 65 Passaic Ave Kearny NJ (5)
Standard Portable Cord Co Inc Mayville NY (1-2)
Stocker & Yale Inc Green St Marblehead Mass (1-2-3-6)
Stonco Electric Products Co 333 Monroe Ave Kenilworth NJ (2-5-9-11)
Sun-Lite Mfg Co 2555 Bellevue Ave Detroit 7 Mich (1)
Surrette Storage Battery Co Inc Jefferson Ave Salem Mass (5)
Swing-O-Lite Inc 13 Moonachie Rd Hackensack NJ (1-6-11)
Swivellor Co Inc Nanuet NY (1-6)
Thermolyne Corp 513 Huff St Dubuque Iowa (1-11)
U-C-Lite Mfg Co 1050 W Hubbard St Chicago 22 Ill (5-8)
Ultra-Violet Products Inc 5114 Walnut Grove Ave San Gabriel Calif (6)
Van Brunt Electric & Mfg Co Inc 252-254 Van Brunt St Brooklyn 31 NY (11)
Vimco Mfg Co Inc Main St (P O Box 373) Holland NY (1)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1)
WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-3-4-5)—ADV PG 2nd cover
White (O C) Sales Co 40 Green St Marblehead Mass (1)
Wide-Lite Corp P O Box 191 Houston 1 Tex (11)
Woodhead (Daniel) Co 15 N Jefferson St Chicago 6 Ill (1 thru 4-6 thru 9)
Woodward Machine Co Lighting Div 4833 Elmhurst Detroit 4 Mich (1)

9F. GASEOUS DISCHARGE LAMPS

1. Arc
2. Cold cathode
3. Fluorescent
4. Mercury vapor
5. Sodium vapor

Light sources only; fixtures are listed under "Portable Lamps" and "Residential Lighting."

Amplex Corp Glen Cove Rd Carle Place Long Island NY (3-4)
Champion Lamp Works 330 Lynnway Lynn Mass (3-4)
Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (2)
Cooper Hewitt Electric Co Inc 720-732 Grand St Hoboken NJ (3-4)

Cutler Electrical Products Inc 5524 Haverford Ave Philadelphia Pa (2)
Duro-Test Corp 2321 Hudson Blvd North Bergen NJ (2-3-4)
General Electric Co Lamp Div Large Lamp Dept Nela Park Cleveland Ohio (3-4)
GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (3)—ADV PG 2
Illuminating Engineering Co 2347 East Nine Mile Rd Hazel Park Mich (2)
Interlectric Div El-Tronics Inc 1401 Lexington Ave Warren Pa (3)
Luxor Lighting Products Inc 350 5th Ave New York 1 NY (2-3-4)
Marvel Lamp Co 307 Newark St Hoboken NJ (3)
National Cathode Corp 317 E 34 St New York 16 NY (2)
Penetray Corp 615 Front St Toledo 5 Ohio (3-4)
Poliak Luminescent Corp 1105 W Lawrence Ave Chicago 40 Ill (2-3)
Radiant Lamp Corp 300 Jelliff Ave Newark 8 NJ (4)
Solar Electric Corp 121 Central Ave Warren Pa (3)
Suclar Laboratories Inc 1197 McCarter Highway Newark NJ (3)
Supra Lux Mfg Co Inc 406-416 E 161 St New York 51 NY (2-3)
Swedish Iron & Steel Corp 910 Westfield Ave Elizabeth NJ (2)
Sylvania Electric Products Inc 730 Third Ave New York 19 NY (1-2-3)
Voltrac Tubes Inc 44 Cross St Norwalk Conn (2-3)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 5)
Westron Corp 652 Hudson St NY 14 NY (2-3-4)

9G. FILAMENT LAMPS

1. Clear or frosted
2. Colored
3. Glow (neon & argon)
4. Infrared
5. Ultra-violet
6. Insect repellent
7. Miniature
8. Reflector Hood & PAR
9. Sealed beam
10. Decorative
11. Quartz
12. Traffic signal
13. Shock-resistant
14. Series street lighting

Light sources only; fixtures are listed under "Portable Lamps" and "Residential Lighting."

Amplex Corp Glen Cove Rd Carle Place Long Island NY (1-2-4-6-8-9-11)
Champion Lamp Works 330 Lynnway Lynn Mass (1-2-4-6-8-10)
Chicago Miniature Lamp Works 1500 N Ogden Ave Chicago 10 Ill (1-2-3-7-9)
Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (5)
Comet Lamp Co 5 E 35 St New York 16 NY (10)
Cooper Hewitt Electric Co Inc 720-732 Grand St Hoboken NJ (5-11)
Dialight Corp 60 Stewart Ave Brooklyn 37 NY (3-7)
Drake Mfg Co 4626 N Olcott Ave Chicago 31 Ill (3-7)
Duro-Test Corp 2321 Hudson Blvd North Bergen NJ (1-2-4-6-8)
E-Lite Co Inc 111 W 22 St New York 11 NY (1)
General Electric Co Lamp Div Large Lamp Dept Nela Park Cleveland Ohio (1 thru 10)
General Electric Co Lamp Div Miniature Lamp Dept Nela Park Cleveland Ohio (1 thru 10)
GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 11)—ADV PG 84-85
GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-2-3-4-5-6-8-9-11)—ADV PG 2
Luxe Lamp Co 928 Elm St Kearny NJ (3-7)
Interlectric Div El-Tronics Inc 1401 Lexington Ave Warren Pa (1-6-8)
Kay Electric Co Maple Ave Pine Brook NJ (7)
Luxor Lighting Products Inc 350 5th Ave New York 1 NY (1-2-4-6-8-9-12-13-14)
Marvel Lamp Co 307 Newark St Hoboken NJ (1-2-4-6-8)
Natale Machine & Tool Co 339 Highway #17 Carlstadt NJ (8)
NORTH AMERICAN ELECTRIC LAMP CO 1520 N 13 St St Louis 6 Mo (2-4-7-10)—ADV PG 124
Northern Incandescent Lamp Co 1 Newark St Hoboken NJ (1-2-4-6)
Penetray Corp 615 Front St Toledo 5 Ohio (1-2-4-5-6-8-10-12-13-14)
Pyrosil Inc 1889 Front St Cuyahoga Falls Ohio (4)

Radiant Lamp Corp 300 Jelliff Ave Newark 8 NJ (1-2-4-8-9-13)
Signalite Inc 37-41 Neptune Highway Neptune NJ (3)
Solar Electric Corp 121 Central Ave Warren Pa (1-2-4-6)
Southern New England Ultraviolet Co Newfield St Middletown Conn (4-5)
Star-A Electric Mfg Co Inc 41 Varick Ave Brooklyn 37 NY (1-6-8)
Sylvania Electric Products Inc 730 Third Ave New York 19 NY (1-2-3-4-7-8)
Ultra-Violet Products Inc 5114 Walnut Grove Ave San Gabriel Calif (5)
Weiss & Biheller Merchandise Corp 40 W 20 St New York 11 NY (10)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 5-7 thru 11-13-14)
Westinghouse Electric Corp Lamp Div Bloomfield NJ (1 thru 9)
WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2)—ADV PG 2nd cover
Westron Corp 652 Hudson St NY 14 NY (1-2-4-6-8-9-10-12)

9H. LIGHTING SYSTEM ACCESSORIES

1. Reflectors
2. Louvers & diffusers
3. Glassware
4. Panels
5. T-bars & supports
6. Gimbal rings

For use with suitable sockets or fixtures or for area and ceiling lighting systems.

Abolite Lighting Div Jones Metal Products Co West Lafayette Ohio (1-2)
Acme Lighting & Mfg Co 949 E 31 St Los Angeles 11 Calif (1)
Afco Lite Corp 1378 N Wolcott Chicago 22 Ill (1)
Alexander-Tagg Industries Inc Jacksonville Road at Summit Ave Hatboro Pa (6)
All-Brite Light Co 400 S 12 St Reading Pa (1)
AMERICAN LOUVER CO 5308 N Elston Ave Chicago 30 Ill (2)—ADV PG 73
Artcraft Lighting Co Inc 248 McKibbin St Brooklyn 6 NY (1)
Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (1-2)
Bryant Electric Co 1421 State St (Box D Barnum Sta) Bridgeport 2 Conn (1-2)
Canning-Pekara Inc 2144 N Wood St Chicago 14 Ill (1-2-6)
Capital Stage Lighting Co Inc 527 W 45 St New York 36 NY (1)
Ceiling Materials Co 200 Waring Rd Memphis 17 Tenn (5)
Cold Cathode Lighting Corp 76 S Bayles Ave Port Washington NY (1)
Cole (C W) & Co Inc P O Box 3382 Los Angeles 54 Calif (1)
Columbia Lighting North 2310 Fancher Way Spokane Wash (2-5)
Compco Corp 1800 N Spaulding Ave Chicago 47 Ill (1)
Corning Glass Works Corning NY (3-4)
Crownlite Fluorescent Co 7 Roselle St Mineola NY (1)
Curtis Lighting Div Curtis-All Brite Lighting Inc 6135 W 65 St Chicago 38 Ill (1)
Cutler Light Mfg Co 2026 N 22 St Phila 21 Pa (1)
Derrick Light Inc P O Box 9335 Houston Texas (1)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1)
Electro Lighting Corp 1536 S Paulina St Chicago 8 Ill (1)
Erie Glass Mfg Co 564 Union Trust Bldg Pittsburgh 19 Pa (3)
Fannon (John J) Products Co 3000 E Woodbridge Detroit 7 Mich (4)
Frink Corp 211 63rd St Brooklyn 20 NY (1-2)
General Lighting Co 248 McKibbin St Brooklyn 6 NY (1)
Grayco Products 3830 N Kedzie Chicago 18 Ill (2-6)
Great Northern Mfg Corp 1056 N Wood St Chicago 22 Ill (1)
Gruber Bros Inc 90 S First St Brooklyn 11 NY (1)
Guth (Edwin F) Co 2615 Washington Blvd St Louis 77 Mo (1-2-5)
Hall (William H) Co Windsor Locks Conn (5)
Hexcel Products Inc 2332 4th St Berkeley 10 Calif (2)

Holophane Co Inc 342 Madison Ave New York 17 NY (1-3)
 Houe-O-Lite Corp 5700 S Perry Ave Chicago 21 Ill (1-2)
 Iso Industries 600 E Turner St Los Angeles 12 Calif (4)
 Jackson Electrical Co 900 W Van Buren St Chicago 7 Ill (1)
 Joleco Corp 2513 Baldwin St St Louis 6 Mo (1-2)
 K-B Lighting Mfg Co 2101 Byberry Rd Phila 16 Pa (1)
 Kent Lighting Corp 500 Johnson Ave Brooklyn 37 NY (2)
 Keystone Electric Mfg Co 2228 E Tioga St Phila 34 Pa (1)
 Killark Electric Mfg Co 3940 Easton Ave St Louis 13 Mo (1)
 Kliegl Bros Universal Electric Stage Lighting Co Inc 321 W 50 St NY 19 NY (1)
 Kurtzon (Morris) Inc 1420 S Talman Ave Chicago 8 Ill (1)
 L & P Lighting Box 157 Olive Branch Miss (1)
 Lancaster Glass Corp Lancaster Ohio (1-2-3)
 Lee-Bert Inc 900 Lapeer St Saginaw Mich (4)
 Legion Lighting Co 221 Glenmore Ave Brooklyn 7 NY (1-2-3-4-6)
 Lightonics P O Box 7211 Oakland 1 Calif (2-4)
 Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (1)
 McKee Div Jeannette Glass Co Jeannette Pa (3)
 Melrose Lighting Co Inc Fort Washington Industrial Park Fort Washington Pa (1-2)
 Mid-West Chandelier Co 15th & Gentry (P O Box 7365) North Kansas City 16 Mo (3)
 Midwest Lighting Products Co P O Box 536 Edgewater Branch Cleveland 7 Ohio (1)
 Miller Co Illuminating Div 99 Center St Meriden Conn (1-2)
 MirroFlector Co Inc 40 Bayview Ave Inwood LI NY (1)
 Modern Light Co Inc 7809 Maplewood Industrial Court St Louis 17 Mo (1)
 Multi Electric Mfg Inc 4223 W Lake St Chicago 24 Ill (1)
 Overbath & Ayres Mfg Co 411 S Clinton St Chicago 7 Ill (1)
 Pittsburgh Reflector Co Oliver Bldg Mellon Square Pittsburgh 22 Pa (1)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (5)
 Quadrangle Mfg Co 32 S Peoria St Chicago 7 Ill (1)
 Rab Electric Mfg Co Inc 605 E 132 St New York 54 NY (1)
 Ruby-Phillie Corp 32-02 Queens Blvd LIC 1 NY (1-2)
 Russell & Stoll Co Inc 125 Barclay St New York 7 NY (1-4)
 Sinko Mfg & Tool Co 7310 W Wilson Ave Chicago 31 Ill (2)
 Spero Electric Corp 18222 Lanken Ave Cleveland 19 Ohio (1)
 Stabrite Fluorescent Mfg Co 3550 Northwest 49 St Miami Fla (1)
 Standard Portable Cord Co Inc Mayville NY (1)
 Steber Div Pyle-National Co 2700 Roosevelt Rd Broadview Ill (1)
 Supreme Lighting Co 600 E Turner St Los Angeles Calif (4)
 Swiweller Co Inc Nanuet NY (1-2)
 Union Insulating Co Inc Box 351 Parkersburg W Va (3)
 United Lighting & Ceiling Co 2828 Ford St Oakland 1 Calif (2-4-5)
 Versen (Kurt) Co 4 Slocum Ave Englewood NJ (1-2)
 Weiss & Biheller Merchandise Corp 40 W 20 St New York 11 NY (3)
 Westinghouse Electric Corp Lighting Div 1216 W 58th St (P O Drawer 5817) Cleveland 1 Ohio (1)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
 Yorkville Metal Products Co 627 Greenwich St New York 14 NY (1)

9J. MISCELLANEOUS LIGHT SOURCES

1. Radioisotope excited
2. Electroluminescent panels

Sylvania Electric Products Inc 730 Third Ave New York 19 NY (2)
 United States Radium Corp Hanover Ave Morristown NJ (2)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2)
 Westinghouse Electric Corp Lamp Div Bloomfield NY (2)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
9-1	Portable Lamps; 12p (Acme Lite)
9-2	Miniature Light Sockets; 24p (Aeronautical Electric)
9-3	Fluorescent Lighting Fixtures; 28p (American)
9-4	Lighting Classics; 16p (Benjamin)
9-5	Illuminated Ceilings; 20p; Cat. No. D (Benjamin)
9-6	Protected Lighting; 20p; Cat. No. I (Benjamin)
9-7	Triple-shell Air-Handling Troffers; 40p; Cat. No. B (Benjamin)
9-8	Outdoor Lighting; 18p; Cat. No. C-400 (Bryant)
9-9	Lighting for Industry; 12p (Day-Brite)
9-10	Fluorescent Lighting; 24p (Day-Brite)
9-11	Pilot Lights; 24p; Cat. No. L-161-C (Dialight)
9-12	Emergency Lighting Equipment; 10p; Cat. No. LW-3 (Electric Cord)
9-13	Emergency Lighting; 12p (Electric Cord)
9-14	Fluorescent Lamps; 16p; Cat. No. 6200 (Art Specialty)
9-15	Industrial Localities; 16p; Cat. No. Sec. 1 L-9 (Fostoria)
9-16	Area Lighting; 30p; Cat. No. GEA-7223 (GE Co.)
9-17	Large Lamps; 72p (GE Co.)
9-18	Lighting Equipment; 12p (Gotham)
9-19	Lighting Equipment; 50p (Halo)
9-20	Reducing Lighting Pole Costs; 8p Cat. No. G-25 (Hope)

9-21	Engineered Lighting & Control Equipment; 44p; Cat. No. 101 (Hub)
9-22	Engineered Lighting and Control Equipment for Open Stage Theatres; 12p; Cat. No. 102 (Hub)
9-23	Lighting Systems for Children's Theatres; 16p; Cat. No. 104 (Hub)
9-24	Surface & Pendant Fluorescent Luminaires; 8p (Kent)
9-25	Recessed Fluorescent Square & Wide Troffers; 8p (Kent)
9-26	Brackets and Mast Arms; 14p; Cat. No. BR-1-12-60 (Kerrigan)
9-27	Traffic Signal Standards; 14p (Kerrigan)
9-28	Strain Poles; 18p; Cat. No. 5-6-561 (Kerrigan)
9-29	Flood Lighting Standards; 12p; Cat. No. F3-2-61 (Kerrigan)
9-30	Aluminum Lighting Standards; 24p; Cat. No. R-2-561 (Kerrigan)
9-31	Steel Lighting Standards; 26p; Cat. No. O-2-162 (Kerrigan)
9-32	Garden, Swimming Pool and Fountain Lighting; 66p (Kim)
9-33	Lighting; 20p; Cat. No. 58 (Kuehn)
9-34	Lighting Fixtures; 20p; Cat. No. 52 (Legion Lighting)
9-35	Recessed Lighting Systems; 8p (Lok-Products)
9-36	Residential Recessed Lighting Fixtures; 12p; Cat. No. 134 (Marvin)
9-37	Church Lighting; 18p; Cat. No. 160 (McFadden)
9-38	Residential Lighting; 68p; Cat. No. M-166 (Moe)
9-39	Lighting Equipment; 59p; Cat. No. J (Mole-Richardson)
9-40	Lighting; 100p (Omega)
9-41	Lighting Fixtures, 16 p; Cat. No. A14 (Pass & Seymour)
9-42	Lighting Fixtures; 20p; Cat. No. 61 (Pauluhn)
9-43	Contemporary Lighting; 16p; Cat. No. 59-C (Perfeclite)
9-44	Architectural Lighting; 16p; Cat. No. 62-B (Perfeclite)
9-45	Engineered Lighting Fixtures; 16p; Cat. No. L-61 (Perfeclite-Line)
9-46	Lighting Standards; 20p (Pfaff & Kendall)
9-47	Colonial Lanterns; 16p (Post-O-Lite)
9-48	Explosion-Proof Floodlights; 6p; Cat. No. 659 (Pyle-National)
9-49	Residential Lighting; 32p; Cat. No. 59 (Regal-Lite)
9-50	Residential Lighting; 32p; Cat. No. 660 (Sea Gull)
9-51	Lighting Products; 32p (Shaper)
9-52	Battery Powered Lighting Equipment; 16p (U-C-Lite)
9-53	Fashions in Lighting; 18p; (Unlimited Design)
9-54	Lighting Fixtures; 58p (Virden)

SECTION 10. SIGNAL, COMMUNICATING & INDICATING EQUIPMENT

Many of the indicating devices listed below are closely related to industrial processing controls listed in Section 3.

10A. METERS

1. Ammeters, voltmeters & volt-ammeters
2. Kva meters
3. Light meters
4. Demand meters
5. Fluxmeters
6. Galvanometers
7. Kilowatt-hour meters
8. Ohmmeters

9. Recording-type meters
10. Power factor meters
11. Tachometers
12. Varmeters
13. Wattmeters
14. Phase angle meters
15. Electrolysis meters
16. Frequency meters
17. Electrostatic meters
18. Vibration meters
19. High-voltage test meters
20. Potentiometers
21. Clamp-on (snap-around) meters
22. Potential devices

Acton Laboratories Inc 533 Main St Acton Mass (14)
 Aero Instrument Facility Northrop Corp-Ventura 11975 Sherman Way North Hollywood Calif (16)
 Ainsarco Mfg Co Inc 3875 Bigelow Blvd Pittsburgh 13 Pa (1-9)

Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich (1-11)
 Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY (1-9-21)
 Anchor Mfg Co P O Box 959 Manchester NH (22)
 Annis (R B) Co 1101 N Delaware St Indianapolis 2 Ind (9)
 Assembly Products Inc Chesterland 31 Ohio (1)
 Associated Research Inc 3789 W Belmont Ave Chicago 18 Ill (8-11)
 Bailey Meter Co 1050 Ivanhoe Rd Cleveland 10 Ohio (9)
 Beede Electrical Instrument Co Inc Penacook NH (1-6-8-13)
 Bergen Laboratories Inc 60 Spruce St Paterson 1 NJ (1-8)
 Biddle (James G) Co 1316 Arch St Phila 7 Pa (2-6-8-11-16)
 Bliss Electronic Corp Sussex NJ (1-8-27)

Bodendieck Tool Co P O Box 499 Taylorville Ill (19)
 Borden Engineering Div M J Johnson Aircraft Engineering Co Box 10 Morristown NJ (6)
 Central Scientific Co 1700 Irving Pk Rd Chicago 13 Ill (1-6-20)
 Cohu Electronics Inc Kin Tel Div 5725 Kearney Villa Rd San Diego 12 Calif (1-6)
 Columbia Electric Mfg Co 4519 Hamilton Ave Cleveland 14 Ohio (1-21)
 Continental-Wirt Electronics Corp 26 W Queen Lane Philadelphia 44 Pa (20)
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill (1-8-19)
 Davis Electric Co 28 Parker St Wallingford Conn (8)
 Daystrom Inc Weston Instruments Div 614 Frelinghuysen Ave Newark 12 NJ (1-2-3-5-6-8-10 thru 16-19-21)
 DeJura-Amsco Corp Electronics Div 4501 Northern Blvd Long Island City NY (1-9)
 Duncan Electric Mfg Co Lafayette Ind (4-7)
 Durant Mfg Co 1900 N Buffum St Milwaukee 1 Wis (11)
 Eastern Specialty Co 3617 N 8th St Phila 40 Pa (8-14-22)
 Electric Re-Light Co Uniman Pl at S Goodman Rochester 20 NY (7)
 Electric Tachometer Corp 68th & Upland Sts Phila 42 Pa (11)
 Electro-Mechanical Instrument Co 8th & Chestnut Sts Perkasie Pa (1)
 Electro-Mechano Co 241 E Erie St (EM) Milwaukee 2 Wis (11)
 Engelhard Industries Inc 113 Astor St Newark 14 NJ (1)
 EPCO Electronics Inc 140 Liberty St NY 6 NY (1-8)
 Erwood Inc 1770 Berteau Ave Chicago 13 Ill (18)
 Esterline Angus Instrument Co Inc P O Box 596 Indianapolis 6 Ind (1-2-9-10-11-12-13-16)
 General Controls Co 801 Allen Ave Glendale Calif (9)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 22)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-4-7-8-9-10-13)—ADV PG 84-85
 General Radio Co West Concord Mass (8-11-18)
 Gray Instrument Co 448 Mill Rd Andalusia Pa (20)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1)—ADV PG 2
 Greibach Instruments Corp 315 North Ave New Rochelle NY (1-6-8)
 Hewson Co Inc 115 Maple St Summit NJ (8)
 Hickok Electrical Instrument Co 10614 Dupont Ave Cleveland 8 Ohio (1-2-4-5-6-8-10-12-13-14-16)
 Hobbs Div Stewart-Warner Corp Yale & Ash Sts (P O Box 358) Springfield Ill (19)
 Holtzer-Cabot Corp 125 Amory St Boston 19 Mass (8)
 Howell Instruments Inc 3479 W Vickery Blvd Fort Worth 7 Tex (1-2-6-8-9-16)
 Hoyt Electrical Instrument Works Inc 42 Carleton St Cambridge 42 Mass (1)
 Ideal Industries Inc 5136 Park Ave Syracuse Ill (11)
 Industrial Devices Inc Edgewater 19 NJ (1)
 Industrial Instruments Inc 89 Commerce Rd Cedar Grove NJ (8-10-19-20-22)
 Industrial Transformer Corp Gouldsboro Pa (8)
 Jones Motorola Corp 432 Fairfield Ave Stamford Conn (11)
 Korfund Co Cantigue Rd Westbury NY (18)
 Leeds & Northrup Co 4970 Stenton Ave Phila 44 Pa (6-8-9)
 Letch-Huard Corp Stark & Commercial Sts Manchester NH (1)
 Lewis Engineering Co 52 Rubber Ave Naugatuck Conn (9)
 Manning Maxwell & Moore Inc 250 E Main St Stratford Conn (1)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-8-11-13-21)
 Meters Inc 5353 N Keystone Ave Indianapolis 20 Ind (1-8-11-19)
 Metron Instrument Co 5300 S Delaware St Littleton Colo (11)
 Minneapolis-Honeywell Regulator Co Boston Div 40 Life St Boston 35 Mass (6)
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windrim Aves Phila 44 Pa (1-4-6-9-10-11-12-13)
 Minneapolis-Honeywell Regulator Co Precision Meter Div Grenier Field Manchester NH (1-22)
 Partlow Corp 230 Campion Rd New Hartford NY (9)
 Peschel Electronics Inc RFD #1 Patterson NY (19)
 Radio Frequency Laboratories Inc Boonton NJ (22)
 Rattray (George) & Co Inc 101 New South Rd Hicksville NY (9)
 S & C Electric Co 6601 Ridge Blvd Chicago 26 Ill (22)
 Sangamo Electric Co 11th & Converse Springfield Ill (1-2-4-7-9-12-13)
 Servis Research Instrument Corp 310 Main St New Rochelle NY (1-5-6-10-13-16-17-20)
 Servo-Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ (11)
 Shallicross Mfg Co Preston St Selma NC (2-6-8-9-15)
 Shurite Meters 130 Wallace St New Haven 8 Conn (1)

Simpson Electric Co 5200 W Kinzie St Chicago 44 Ill (1-8-13)
 Snap-on-Tools Corp 8028 28th Ave Kenosha Wis (11)
 Southwestern Industrial Electronics Co 10201 Westheimer (P O Box 22187) Houston 27 Tex (1-6-8-11)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (11)
 States Co 19 E New Park Ave Hartford & Conn (22)
 Sticht (Herman H) Co Inc 27 Park Place New York 7 NY (1-8-11-16)
 Trio Laboratories Inc Dupont St Plainview NY (1-14)
 Triplett Electrical Instrument Co 286 Harmon Rd Bluffton Ohio (1-8-13-19-21)
 U S Gauge Div AMETEK Inc Clymer Ave Sellersville Pa (11)
 Vibrascope Co P O Box 97 Glenford NY (16-18)
 Wac Line Inc 35 S St Clair St Dayton 2 Ohio (1-11-16)
 Wexler Instrument Corp 195 E Merrick Rd Freeport LI NY (9)
 West Instrument Corp 4363 W Montrose Ave Chicago 41 Ill (20)
 Western Electro-Mechanical Co Inc 300 Broadway Oakland 7 Calif (1-10-14)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-4-6 thru 14-16-19-20-21-22)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2-4-7-8-9-10)—ADV PG 2nd cover
 Yellow Springs Instrument Co Inc P O Box 106 Yellow Springs Ohio (9)
 Yokogawa Electric Works Inc 40 Worth St New York 13 NY (1-11-13)
 Zernickow (O) Co 15 Park Row New York 38 NY (11)

10B. INDICATORS & ALARMS

1. Annunciators
2. Bin level
3. Blown fuse
4. Revolution
5. Current failure
6. Fault & ground
7. Photoelectric
8. Liquid level
9. Peak load
10. Phase sequence
11. Smoke
12. Synchroscopes
13. Temperature
14. Lamp failure
15. Sound level
16. Liquid-flow
17. Counting devices
18. Sprinkler alarms
19. Elapsed time
20. Fire alarm detectors
21. Shaft motion
22. Static electricity

For associated controls, see "Controls" & "Control Switches" in Section 3.

Abrams Instrument Corp 606 E Shawasee St Lansing Mich (17)
 Acoustica Associates Inc 10400 Aviation Blvd Los Angeles 45 Calif (8)
 Acme Fire Alarm Company Inc 106 Seventh Ave New York 11 NY (1-6)
 Aero Instrument Facility Northrop Corp-Ventura 11975 Sherman Way North Hollywood Calif (19)
 American District Telegraph Co 155 Sixth Ave New York 13 NY (11-18-20)
 Anderson (W E) Inc 320 W 80 St Kansas City 14 Mo (6-16-22)
 Assembly Products Inc Chesterland 31 Ohio (13)
 Associate Research Inc 3789 W Belmont Ave Chicago 18 Ill (10)
 Auth Electric Co Inc 34-20 45th St LIC 1 NY (1-6)
 Autocall Co 58 Warden Ave Shelby 9 Ohio (1-8-16-18)
 Automatic Control Co 995 University Ave St Paul 4 Minn (1-5-8-13)
 Automatic Devices Div of AMETEK Inc Sellersville Pa (13)
 Automatic Timing & Controls Inc King of Prussia Pa (2-4-8-17-19)
 Automation Products Inc 3030 Max Roy St Houston 24 Tex (8)
 B/W Controller Corp 2200 E Maple Rd Birmingham Mich (8)
 Bailey Meter Co 1050 Ivanhoe Rd Cleveland 10 Ohio (8-11-13-16)
 Bergen Laboratories Inc 60 Spruce St Paterson 1 NJ (19)
 Biddle (James G) Co 1316 Arch St Phila 7 Pa (6)
 Bin-Dicator Co 17190-212 Denver Detroit 24 Mich (2-8-21)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (8-13)

Borden Engineering Div M J Johnson Aircraft Engineering Co Box 10 Morristown NJ (6)
 Brunswick Instruments P O Box 813 New Brunswick NJ (10)
 Burling Instrument Co Inc 26 River Rd Chatham NJ (13)
 Central Station Signals Inc 53 W 23 St New York 10 NY (5-8-11-13)
 Com-Pak-Ett Mfg Corp 650 Grand St Allegan Mich (17)
 Couch (S H) Co Inc 3 Arlington St North Quincy 71 Mass (1-20)
 Crouse-Hinds Co Syracuse 1 NY (6-8)
 Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (7-8)
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill (6-10)
 Daystrom Inc Weston Instruments Div 614 Frelinghuysen Ave Newark 2 NJ (12-13-19)
 Designers for Industry Inc 4241 Fulton Pkwy Cleveland 9 Ohio (13-19-20)
 Dietz (Henry G) Co Inc 12-16 Astoria Blvd Long Island City 2 NY (2-7-8-16)
 Durant Mfg Co 1900 N Buffum St Milwaukee 1 Wis (17)
 Dwyer (F W) Mfg Co Woodland at Greenwood (P O Box 373) Michigan City Ind (8)
 Eastern Specialty Co 3617 N 8th St Phila 40 Pa (6-7-10)
 Edwards Co Inc Norwalk Conn (1-20)
 Electric Radiant Heat Inc 1517 Wells St Ft Wayne Ind (6)
 Electric Tachometer Corp 68th & Upland Sts Phila 42 Pa (4)
 Electro Devices Inc 4648 Easton Ave St Louis 13 Mo (1)
 Electro-Mechanical Instrument Co 8th & Chestnut Sts Perkasie Pa (5)
 Electronic Control Corp 15341 Dale Detroit 23 Mich (7-11)
 Electronics Corp of America One Memorial Dr Cambridge Mass (7-8-11)
 Eilenko Inc 3322 M St N W Washington 7 DC (1-6-11-13)
 Erickson Electrical Equipment Co 4460 N Elston Ave Chicago 30 Ill (6)
 Erwood Inc 1770 Berteau Ave Chicago 13 Ill (15)
 Excel Electric Service Co Inc 2113 S Western Ave Chicago 8 Ill (6)
 Faraday Inc 2011 W Beecher Rd Adrian Mich (1)
 Fenwal Inc Pleasant St Ashland Mass (13)
 Fischer & Porter Co 335 Warminster Rd Hatboro Pa (1-7-8-13-16)
 Fisher Research Laboratory Inc 1961 University Ave Palo Alto Calif (8)
 Gamewell Co Newton Upper Falls 64 Mass (1-11-18-20)
 General Controls Co 801 Allen Ave Glendale Calif (4-8-13)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2-4 thru 13-15-16-17-19-20)
 General Radio Co West Concord Mass (15)
 Glo-Lite Instrument Co 152 Watson Ave Newark 12 NJ (6-10)
 Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio (17-19)
 Grinnell Co Inc 260 W Exchange St Providence 2 RI (8-18)
 Haledy Electronics Co 57 William St NY 5 NY (7-8-16-17)
 Haydon (A W) Co 232 N Elm St Waterbury Conn (19)
 Healy-Ruff Co Water Level Controls Div 2255 University Ave St Paul 14 Minn (8)
 Heat-Timer Corp 657 Broadway New York 12 NY (13)
 Hewitt-Robins 666 Glenbrook Rd Stamford Conn (2)
 Hewson Co Inc 443 Broad St Newark 2 NJ (6)
 Hickok Electrical Instrument Co 10614 Dupont Ave Cleveland 8 Ohio (13)
 Howell Instruments Inc 3479 W Vickery Blvd Fort Worth 7 Tex (13)
 Hughey & Phillips Inc 3200 North San Fernando Blvd Burbank Calif (14)
 Illinois Testing Laboratories Inc 420 N LaSalle St Chicago 10 Ill (13)
 Industrial Devices Inc Edgewater 19 NJ (3)
 Industrial Instruments Inc 89 Commerce Rd Cedar Grove NJ (2)
 Instrument Laboratories Corp 315 W Walton Pl Chicago 10 Ill (6)
 Jeffrey Mfg Co 832 N 4 St Columbus 16 Ohio (2)
 Kidde (Walter) & Co Inc Industrial and Marine Div 459 Main St Belleville 9 NJ (11)
 Kidde Ultrasonic & Detection Alarms Div Walter Kidde & Co Inc 459 Brighton Rd Clifton NJ (7-13)
 Kirkland (H R) Co 8 King St Morristown NJ (1)
 Knopp Inc 1307 66th St Oakland 8 Calif (10)
 Kurman Electric Co 191-193 Newell St Brooklyn 22 NY (7)
 Larson Instrument Co 24 Orchard St Tarrytown NY (5-13)
 Lee Electric Inc 566 52nd St West New York NJ (1-18-20)
 Leeds & Northrup Co 4970 Stenton Ave Phila 44 Pa (6-11-13)
 Magnetrol Inc 5300 Belmont Rd Downers Grove Ill (8)
 Manning Maxwell & Moore Inc 250 E Main St Stratford Conn (8-13)
 Marsh (Jas P) Crop 3501 Howard St Skokie Ill (13)

McDonnell & Miller Inc 3500 N Spaulding Ave Chicago 18 Ill (8)
 Mercoid Corp 4201 W Belmont Ave Chicago 41 Ill (13)
 Meters Inc 5353 N Keystone Ave Indianapolis 20 Ind (13)
 Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (11-18)
 Minneapolis-Honeywell Regulator Co Industrial Div Wayne & Windrim Aves Phila 44 Pa (7-8-13)
 Minneapolis-Honeywell Regulator Co Precision Meter Div Grenier Field Manchester NH (19)
 Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (6)
 New Jersey Meter Co Inc 89 Terminal Ave Clark NJ (16)
 O'Brien Electric Corp 6514 Santa Monica Blvd Hollywood 38 Calif (1)
 Opad Electric Co 43 Walker St New York 13 NY (6-10)
 Pacific Fire Extinguisher Co San Francisco 3 Calif (1-20)
 Panelist Div ISI Inc 7401 N Hamlin Ave Skokie Ill (1)
 Parr Mfg Corp 48 Hale St Cranford NJ (6)
 Partlow Corp 230 Campion Rd New Hartford NY (13)
 Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa (1)
 Photobell Co Inc 12 E 22 St New York 10 NY (8-11-17)
 Photomation Inc 280 Polaris Ave Mountain View Calif (2-4-7-8-11-17)
 Portable Light Co Inc 65 Passaic Ave Kearny NJ (7)
 Post Electronic Products 12 Lothrop St Beverly Mass (17)
 Precision Products & Controls Inc 6116 E 15th St Tulsa 12 Okla (4-17)
 Pyrometer Instrument Co Bergenfield NJ (13)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (6)
 Scam Instrument Corp 3101 N Lowell Ave Chicago 41 Ill (1)
 Scott (H H) Inc 111 Powder Mill Rd Maynard Mass (15)
 Scrayco Mfg Co 201 Greene Ave Middlesex NJ (2)
 Sell (H H) Electric Co 3240 Dakota Ave Minneapolis 16 Minn (10)
 Shallcross Mfg Co Preston St Selma NC (6)
 Simmonds Precision Products Inc Tarrytown NY (1-5-8-13-16)
 Solar Sonic Devices Inc Box 65 Hicksville LI NY (7)
 Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn (8-11-16-18-20)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (1-4)
 Stewart Bros Div Instrument Laboratories 315 W Walton Pl Chicago 10 Ill (6)
 Sticht (Herman H) Co Inc 27 Park Pl New York 7 NY (10-19)
 Superior Interlock Corp 73-39 Central Ave Glendale 27 NY (1)
 Tigerman Engineering Co 4332 N Western Ave Chicago 18 Ill (1)
 Tobe Deutschmann Corp Providence Highway Norwood Mass (6)
 Trimont Instrument Div General Controls Co 2000 S Wolf Rd Des Plaines Ill (2-8)
 United Electric Controls Co 85 School St Watertown 72 Mass (13-18-20)
 United Mfg Co 41 Haig St Hamden, Conn (10)
 U. S. Gauge Div AMETEK Inc Clymer Ave Sellersville Pa (13)
 Veeder-Root Inc 70 Sargeant St Hartford 2 Conn (17)
 Vemaline Products Co 511 Commerce St Franklin Lake NJ (17)
 Viking Instruments Inc East Haddam Conn (1-8-13)
 Walkert Co 141 W Hazel St Inglewood 3 Calif (17)
 Wallace & Tiernan Inc 25 Main St Belleville NJ (7-16)
 Warrick (Chas F) Co 1964 W Eleven Miles Rd Berkley Mich (8)
 Weksler Instruments Corp 195 E Merrick Rd Freeport L I NY (13)
 Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (17)
 West Instrument Corp 4363 W Montrose Ave Chicago 41 Ill (13)
 Western Electro-Mechanical Co Inc 300 Broadway Oakland 7 Calif (10)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-6-7-8-10-20)
 Weston Corp 652 Hudson St NY 14 NY (10)
 Yellow Springs Instrument Co Inc P O Box 106 Yellow Springs Ohio (13)

10C. TESTERS & LOCATORS

1. Growlers
2. Circuit analyzers
3. Protective device analyzers

4. Magnetos
5. Dynamometers
6. Continuity testers
7. Fluorescent unit testers
8. Insulation testers
9. Turns-ratio testers
10. Polarity testers
11. Cable, metal & outlet locators
12. Cable fault locators
13. Voltage testers
14. Coil testers
15. Bridges
16. Ground resistance testers
17. Stroboscopes
18. Oscilloscopes
19. Relay testers
20. Corona testers
21. Dielectric testers
22. Low-resistance testers
23. Neon testers
24. System analyzers
25. Motor analyzers
26. Contact resistance testers
27. Capacitor aging testers
28. Cable tracers
29. Battery testers

A K Electric Corp 231 Front St Brooklyn 1 NY (6)
 Airserco Mfg Co Inc 3875 Bigelow Blvd Pittsburgh 13 Pa (2-8-19)
 Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich (25)
 Amprobe Instrument Corp 630 Merrick Rd Lynbrook NY (28)
 Anderson (W E) Inc 320 W 80 St Kansas City 14 Mo (6-16)
 Associated Research Inc 3789 W Belmont Ave Chicago 18 Ill (8-12-16-20-21)
 Berkshire Laboratories 11-33 Kingsford Rd Hanover NH (17)
 ●BIDDLE (JAMES G) CO 1316 Arch St Phila 7 Pa (8-9-12-16-20-21-22-26)—ADV PG 110
 Bliss Electronic Corp Sussex NJ (2-6-19-26)
 Bogue Electric Mfg Co 52 Iowa Ave Paterson 3 NJ (2)
 Borden Engineering Div M J Johnson Aircraft Engineering Co Box 10 Morristown NJ (2-8-11)
 Bright Star Industries 600 Getty Ave Clifton NJ (6)
 Central Scientific Co 1700 Irving Pk Rd Chicago 13 Ill (13-17-18)
 Cincinnati Clock & Instrument Co 1117 Harrison Ave Cincinnati 14 Ohio (3)
 Cohu Electronics Inc Kin Tel Div 5725 Kearney Villa Rd San Diego 12 Calif (15)
 Crown Industrial Products Co 713 Amsterdam St Woodstock Ill (1)
 Davenport Mfg Div Duncan Electric Co Inc 2532 N Elston Ave Chicago 47 Ill (2-8-12-13-20-21-28)
 Daystrom Inc Weston Instruments Div 614 Frelinghuysen Ave Newark 12 NJ (2-6-8-13)
 Designers for Industry Inc 4241 Fulton Pkwy Cleveland 9 Ohio (2-6-12-18)
 Dice (J W) Co Englewood NJ (6-10-22)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (2-23)
 Eastern Specialty Co 3617 N 8th St Phila 40 Pa (10-13-19)
 Excel Electric Service Co Inc 2113 S Western Ave Chicago 8 Ill (12)
 Fisher Research Laboratory Inc 1961 University Ave Palo Alto Calif (11)
 Fleron (M M) & Son 1220 Yardley Rd Morrisville Pa (6-13)
 Fox Products Co 4720 N 18 St Phila 41 Pa (29)
 G-C Electronics Co 400 S Wyman St Rockford Ill (23)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2-3-4-5-8-13-14)
 General Radio Co West Concord Mass (8-15-17)
 Glodak Co Inc 1544 W Glenoaks Blvd Glendale 1 Calif (11)
 Gray Instrument Co 448 Mill Rd Andalusia Pa (12-15-22)
 Hampden Engineering Corp 99 Shaker Rd East Longmeadow Mass (5)
 Haydon (A W) Co 4060 Ince Blvd Culver City Calif (2-6-8-12-13-21-24)
 Hickok Electrical Instrument Co 10614 Dupont Ave Cleveland 8 Ohio (5-17-18)
 Hlob Industries Inc 442 Elm St Sycamore Ill (6-13-23)
 Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif (18)
 ●IDEAL INDUSTRIES INC 5136 Park Ave Sycamore Ill (2-8-13)—ADV PG 92
 Industrial Development Labs Inc 982 River Rd Edgewater NJ (15)
 Industrial Instruments Inc 89 Commerce Rd Cedar Grove NJ (2-6-8-12-13-15-16-21-22-26-28)
 Instrument Laboratories Corp 315 W Walton Pl Chicago 10 Ill (2-11-12-24)
 Jackson Electrical Instrument Co 124 McDonough St Dayton 2 Ohio (2-18)
 Kay Electric Co Maple Ave Pine Brook NJ (2)
 Knopp Inc 1307 66th St Oakland 8 Calif (13)
 Leeds & Northrup Co 4970 Stenton Ave Phila 44 Pa (12-15)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-2-6-8)
 Meters Inc 5353 N Keystone Ave Indianapolis 20 Ind (8)
 MULTI-Amp Div Multi-Amp Electronic Corp P O Box 161 Cranford NJ (3-6-8-12-19-21-22)

Nankervis (Geo L) Co 15300 Fullerton Ave Detroit 27 Mich (5)
 Network Industries Inc P O Box 397 Bayonne NJ (8-13-15)
 Opad Electric Co 43 Walker St New York 13 NY (8)
 Parr Mfg Corp 44 Austin St Newark 2 NJ (11-12-28)
 Peschel Electronics Inc RFD #1 Patterson NY (6-8-12-13-20-21-28)
 Plaster-Eye Co 2560 Noblestown Rd Pittsburgh 5 Pa (11-12)
 Potter & Rayfield Inc P O Box 1042 Atlanta Ga (1-5)
 Principle Research & Development Corp 200 Citizens Bldg Aberdeen SD (12)
 Rogers Electric Laboratories 2651 Shaker Rd Cleveland Heights 18 Ohio (11)
 S & C Electric Co 6601 Ridge Blvd Chicago 26 Ill (13)
 Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio (1)
 Sensitive Research Instrument Corp 310 Main St New Rochelle NY (12)
 Servo Tek Products Co Inc 1086 Goffe Rd Hawthorne NJ (13)
 Shallcross Mfg Co Preston St Selma NC (11)
 Simmonds Precision Products Inc Tarrytown NY (15-21)
 Simpson Electric Co 5200 W Kinzie St Chicago 44 Ill (2-8-18)
 Sittler Corp 18 N Ada St Chicago 7 Ill (2)
 Slaughter Co College & Young Sts Piqua 5 Ohio (6-8-14-17-21)
 Snap-On-Tools Corp 8028 28th Ave Kenosha Wis (1)
 Sorensen Richard Ave South Norwalk Conn (12)
 Southwestern Industrial Electronics Co 10201 Westheimer (P O Box 22187) Houston 27 Tex (15)
 Speedex Mfg Co 418 S Wyman St Rockford Ill (2)
 Standard Electric Time Co 89 Logan St Springfield 2 Mass (5)
 States Co 19 E New Park Ave Hartford 6 Conn (19)
 Stewart Bros Div Instrument Laboratories 315 W Walton Pl Chicago 10 Ill (2-11-12-24)
 Sticht (Herman H) Co Inc 27 Park Pl New York 7 NY (2-6-8-13-15-16-17)
 Tektronix Inc P O Box 500 Beaverton Ore (18)
 Triplett Electrical Instrument Co 286 Harmon Rd Bluffton Ohio (2-13-18)
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY (11)
 VON Corp 1036-40 Lomb Ave S W (P O Box 3566) Birmingham Ala (8-12-21)
 Waterman Products Co Inc 2445-63 Emerald St Phila 25 Pa (18)
 Wavelength Electric Co 5542 N Ashland Ave Chicago 40 Ill (1)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-5-24-25)
 ●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (2)
 —ADV PG 2nd cover
 Whitney Blake Co 102 Pershing St New Haven 14 Conn (12)
 Yokogawa Electric Works Inc 40 Worth St New York 13 NY (8-16)

10D. BURGLAR ALARM SYSTEMS

1. Residential
2. Commercial & industrial
3. Fence & boundary

American District Telegraph Co 155 Sixth Ave New York 13 NY (2-3)
 Bogen-Presto Div Siegler Corp Route 4 & Forest Ave (P O Box 500) Paramus NJ (2)
 Central Station Signals Inc 53 W 23 St New York 10 NY (1-2-3)
 Diebold Inc Canton 2 Ohio (1-2)
 Edwards Co Inc Norwalk Conn (1-2)
 Gamewell Co Newton Upper Falls 64 Mass (2)
 Industrial Automation Corp 2415 W Montrose Ave Chicago Ill (1-2)
 Kidde Ultrasonic & Detection Alarms Div Walter Kidde & Co Inc 459 Brighton Rd Clifton NJ (1-2-3)
 Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (2-3)
 Pacific Fire Extinguisher Co San Francisco 3 Calif (1-2)
 Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa (1-2)
 Photobell Co Inc 12 E 22 St New York 10 NY (1-2-3)
 Recora Co Inc Powis Rd (Box 68) St Charles Ill (1-2)
 Reeve Electrical Co Inc 120 W 42nd St New York 36 NY (2)
 Scott (H H) Inc 111 Powder Mill Rd Maynard Mass (2)
 Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn (1-2-3)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2)

10E. FIRE ALARM SYSTEMS

1. Residential 2. Commercial & Industrial

Acme Fire Alarm Company Inc 106 Seventh Ave New York 11 NY (2)
American District Telegraph Co 155 Sixth Ave New York 13 NY (2)
Auth Electric Co Inc 34-20 45th St LIC 1 NY (2)
Autocall Co 58 Warden Ave Shelby 9 Ohio (2)
AutoFYRstop Co 2035 Washington Ave Phila 46 Pa (1-2)
Castle Engineering Co P O Box 35 Seneca Castle NY (1-2)
Central Station Signals Inc 53 W 23 St New York 10 NY (2)
Couch (S H) Co Inc 3 Arlington St North Quincy 71 Mass (2)
Edwards Co Inc Norwalk Conn (1-2)
Electronics Corp of America One Memorial Dr Cambridge Mass (2)
Ellenco Inc 3322 M St N W Washington 7 DC (2)
Faraday Inc 2011 W Beecher Rd Adrian Mich (2)
Federal Sign & Signal Corp 13626 S Western Ave Blue Island Ill (2)
Fire Alarm Thermostat Corp 53 W 23 St New York 10 NY (1-2)
Fire Detective Inc 300 Chancellor Ave Newark 12 NJ (1-2)
Fyr-Fyter Co Engineering Systems Div P O Box 66 Edison NJ (2)
Gamewell Co Newton Upper Falls 64 Mass (2)
Industrial Automation Corp 2415 W Montrose Ave Chicago Ill (1-2)
International Business Machines Corp Times Equipment Div 590 Madison Ave New York 22 NY (2)
Kidde Ultrasonic & Detection Alarms Div Walter Kidde & Co Inc 459 Brighton Rd Clifton NJ (1-2)
Lightalarms Electronics Corp 10 W Houston St New York 12 NY (2)
Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (2)
National Time & Signal Corp 21800 Wyoming Ave Detroit 37 Mich (2)
Newark District Telegraph Co 372 Plane St Newark 2 NJ (2)
Pacific Fire Extinguisher Co San Francisco 3 Calif (2)
Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa (2)
Reeve Electrical Co Inc 120 W 42nd St New York 36 NY (2)
Russell & Stoll Co Inc 125 Barclay St NY 7 NY (2)
Slater Electric Inc 45 Sea Cliff Ave Glen Cove NY (1)
Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn (1-2)
Standard Electric Time Co 89 Logan St Springfield 2 Mass (2)
Stromberg Div General Time Corp 135 S Main St Thomaston Conn (2)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2)
●WESTINGHOUSE ELECTRICAL SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-2) —ADV PG 2nd cover
Wheelock Signals Inc Branchport Ave Long Branch NJ (2)

10F. SIGNAL & COMMUNICATION SYSTEMS

1. Calling, paging & locating systems 2. In-and-out registers 3. Intercom systems and equipment 4. Public address systems 5. Closed circuit TV 6. Master antenna systems & accessories 7. Private telephone systems 8. Two-way radio systems 9. Sound-powered telephones 10. Transistorized telephones

Adcrafters Co 325 W Huron St Chicago 10 Ill (1-3-4)
Aitken-Reed Inc 2802 Wollmer St Manitowac Wis (8)
Auth Electric Co Inc 34-20 45th St LIC 1 NY (1-2-3-7)
Autocall Co 58 Warden Ave Shelby 9 Ohio (1)
Bell Sound Systems Inc 555 Marion Rd Columbus 7 Ohio (4)
Bliss Electronic Corp Sussex NJ (2-3-4)
Blonder-Tongue Laboratories Inc 9 Ailing St Newark 2 NJ (5-6)
Bogen-Presto Div Siegler Corp Route 4 & Forest Ave (P O Box 500) Paramus NJ (1-3-4-7)

Cohu Electronics Inc Kin Tel Div 5725 Kearney Villa Rd San Diego 12 Calif (5)
Couch (S H) Co Inc 3 Arlington St North Quincy 71 Mass (1-2-3-7-10)
Dage Div Thompson Ramo Wooldridge Inc 455 Sheridan Ave Michigan City Ind (5)
Dalmotron Co 534 Laurel St San Carlos Calif (1-3-4-6)
Designers for Industry Inc 4241 Fulton Pkwy Cleveland 9 Ohio (5)
Diamond Power Specialty Corp P O Box 415 Lancaster Ohio (5)
Dukane Corp St Charles Ill (1-3-4-7)
Edwards Co Inc Norwalk Conn (1-2-3)
Emerson Electric Mfg Co 8100 Florissant Ave St Louis 36 Mo (3)
Emerson-Rittenhouse Co Inc 68 East St Honeoye Falls NY (3)
Executone Inc 47-37 Austell Pl Long Island City NY (1-2-3-4-7)
Fanon Electronic Industries Inc 439 Frelinghuysen Ave Newark NJ (3-4-7-8-9-10)
Faraday Inc 2011 W Beecher Rd Adrian Mich (2)
Federal Sign & Signal Corp 13626 S Western Ave Blue Island Ill (1)
Feller Engineering & Mfg Co 8026 N Monticello Ave Skokie Ill (3)
Fisher Berkeley Corp 1475 Powell St Emeryville Calif (1-3)
General Electric Co Industrial Electronics Div Technical Products Dept Electronics Park Syracuse NY (5)
Godfrey Mfg Co 1633 N Halsted St Chicago 14 Ill (3)
●HOSE-McCANN TELEPHONE CO INC 25 St 3rd Ave Brooklyn 32 NY (3-9)—ADV PG 102
Insul-8-Corp 1369 Industrial Rd San Carlos Calif (5)
International Business Machines Corp Times Equipment Div 590 Madison Ave New York 22 NY (7)
International Telephone & Telegraph Corp Industrial Products Div 15191 Bledsoe St San Fernando Calif (5)
Javes Electronics P O Box 646 Redlands Calif (6)
Jerrold Electronics Corp Jerrold Bldg 15th & Lehigh Ave Philadelphia 32 Pa (1-5-6)
Kirkland (H R) Co 8 King St Morristown NJ (1-2)
Loge Electronics Inc 2171 W Washington Blvd Los Angeles 18 Calif (1-3-4)
Lovsted (C M) & Co Inc 4000 W Marginal Way Seattle 6 Wash (1)
Minneapolis-Honeywell Regulator Co 2753 Fourth Ave S Minneapolis 8 Minn (3)
Motorola Communications & Electronics Inc 4501 W Augusta Blvd Chicago 51 Ill (1-8)
Murdock Corp 158 Carter St Chelsea 50 Mass (3)
Newcomb Audio Products Co 6824 Lexington Ave Hollywood 38 Calif (1-4)
Nutone Inc Madison & Red Bank Roads Cincinnati 27 Ohio (3)
O'Brien Electric Corp 6514 Santa Monica Blvd Hollywood 38 Calif (1-3-4)
Outercom Electronics Corp 502 Charlottetown Mall Charlotte NC (8)
Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa (1-2)
Progress Mfg Co Inc Castor Ave & Tulip St Phila 34 Pa (3)
Radio Corp of America Front & Cooper St Camden 2 NJ (1-3 thru 8)
Railroad Accessories Corp Tenakill Park Cresskill NJ (10)
Rauland-Borg Corp 3535 West Addison St Chicago 18 Ill (1-3-4)
Rheem Califorme Corp 5922 Bowcroft St Los Angeles 16 Calif (4)
Roche (Paul C) Co Inc 11 Park Pl New York 7 NY (3-7)
Simpson (Mark) Mfg Co Inc 32-28 49th St Long Island City 3 NY (1-3-4)
Sperti Faraday Inc 1322 E Church St Adrian Mich (1-2)
Spurling Fire Alarm & Indicator Co Inc P O Box 468 Athens Tenn (1-2)
Standard Electric Time Co 89 Logan St Springfield 2 Mass (1-2)
Talk-A-Phone Co 5013 N Kedzie Ave Chicago 25 Ill (3)
Tele-Jac Co 840 N Cummings Rd Covina Calif (6)
Vocaline Co of America Inc Coulter St Old Saybrook Conn (3-8)
Webster Electric Co 1900 Clark St Racine Wis (3-4-7)
Weltronic Co 19500 W Eight Mile Rd Detroit 41 Mich (1-3)
Wheeler Electronic Co 150 E Aurora St Waterbury 20 Conn (7-9)
Wheelock Signals Inc Branchport Ave Long Branch NJ (1)
Wilmot Castle Co Box 629 Rochester 2 NY (5)

10G. SOUNDING DEVICES

1. Bells 2. Buzzers

3. Gongs 4. Horns 5. Whistles 6. Chimes 7. Sirens

Acme Fire Alarm Company Inc 106 Seventh Ave New York 11 NY (3-6)
Auth Electric Co Inc 34-20 45th St LIC 1, NY (1-2-3-4-6)
Autocall Co 58 Warden Ave Shelby 9 Ohio (1-3-4-5-6)
Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (1-2-4-7)
Cable Electric Products Inc 234 Daboli St Providence 7 RI (1-2-6)
Couch (S H) Co Inc 3 Arlington St North Quincy 71 Mass (1-2-3-4-6)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (1-2)
Edwards Co Inc Norwalk Conn (1-2-4-6-7)
Ellenco Inc 3322 M St N W Washington 7 DC (1 through 7)
Emerson-Rittenhouse Co Inc 68 East St Honeoye Falls NY (1-2-6)
Faraday Inc 2011 W Beecher Rd Adrian Mich (1)
●FEDERAL SIGN & SIGNAL CORP 13626 S Western Ave Blue Island Ill (1-2-3-4-6-7)—ADV PG 99
Gamewell Co Newton Upper Falls 64 Mass (1-3-4-5-6)
Gem Electric Mfg Co Inc 237 37th St Brooklyn NY (1-2)
Hose-McCann Telephone Co Inc 25th St & 3rd Ave Brooklyn 32 NY (1-2-3)
International Business Machines Corp Times Equipment Div 590 Madison Ave New York 22 NY (1-2-3-4-6-7)
International Register Co 2620 W Washington Blvd Chicago 12 Ill (6)
Lake Mfg Co 2323 Chestnut St Oakland Calif (1-2)
Lee Electric Inc 566 52nd St West New York NJ (1-2-3-6)
Line Electric Co 229 River St Orange NJ (2)
Lumenite Electronic Corp 407 S Dearborn St Chicago 5 Ill (1-2-4-7)
Marvin Electric Mfg Co 648 Santa Fe Ave Los Angeles 21 Calif (6)
Miami Cabinet Div Philip Carey Mfg Co 1700 Grand Ave Middletown Ohio (1-2-6)
Murdock Corp 158 Carter St Chelsea 50 Mass (2)
National Time & Signal Corp 21800 Wyoming Ave Detroit 37 Mich (1-2-3-4-6)
Nutone Inc Madison & Red Bank Roads Cincinnati 27 Ohio (6)
Partrick & Wilkins Co 51 N Seventh St Phila 6 Pa (1-2-3-4-6-7)
Reeve Electrical Co Inc 120 W 42nd St New York 36 NY (1-2-3)
Rodalie Mfg Co Inc 6th & Minor Sts Emmaus Pa (1-2)
Sireno Signal Mfg Corp 65 Passaic Ave Kearny NJ (7)
Spies Electric Works 564 W Van Buren St Chicago 7 Ill (1)
Standard Electric Time Co 89 Logan St Springfield 2 Mass (1-2-3-4-6)
Sterling Siren Fire Alarm Co Inc 12 Bartlett St Rochester 8 NY (7)
Suttle Equipment Corp 135 S LaSalle St Chicago 3 Ill (1-2)
Trine Mfg Corp 1430 Ferris Place New York 61 NY (1-2)
Viking Instruments Inc East Haddam Conn (1-2-3-4-7)
Wheelock Signals Inc Branchport Ave Long Branch NJ (1 thru 6)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
10-1	Methods and Instruments for Maintenance of Generators, Motors and Power Equipment; Cat. No. D-62 (Associated Research)
10-2	Apartment House Telephone Systems; 16p; Cat. No. A-1 (Auth)
10-3	Audible Signal Equipment; 16p; Cat. No. K (Benjamin)

10-4	Transformer Turn Ratio Test Set; 8p; Cat. No. 55 (Biddle)	10-14	Closed Circuit TV Equipment; 104p (Dage)	10-22	High-Current Test Units; 16p; Cat. No. 461 (Multi-Amp)
10-5	Impulse Cable Fault Locators; 16p; Cat. No. 24-25a (Biddle)	10-15	Residential Fire Alarm Systems; 12p (Fire Alarm Thermostat)	10-23	Oil Circuit Recloser Testers; 8p; Cat. No. SB-OCR-1 (Multi-Amp)
10-6	Closed Circuit TV; 8p (Blonder-Tongue)	10-16	Nurses Call System; 30p (Fisher Berkeley)	10-24	Portable Test Sets for Oil Circuit Reclosers; 8p; Cat. No. SB-OCR-1 (Multi-Amp)
10-7	Master Antenna Equipment; 8p (Blonder-Tongue)	10-17	Sound Measuring Equipment; 15p (General Radio)	10-25	Portable Test Units for Protective Relays; 48p; Cat. No. SB-RT-1 (Multi-Amp)
10-8	Sound Systems; 16p; Cat. No. 3070 (Bogen-Presto)	10-18	Electrical/Electronic Test Measuring Control Equipment; 46p; Cat. No. 25 (Industrial Instruments)	10-26	Universal Portable Load Boxes; 8p; Cat. No. SB-LB-1 (Multi-Amp)
10-9	Fire Alarm Equipment; 16p (Castle)	10-19	Intrusion and Fire Detection Equipment; 12p (Kidde)	10-27	Portable Test Units for Circuit Breakers; 16p; Cat. No. SB-CB-1 (Multi-Amp)
10-10	Ammeters; 8p (Columbia Electric)	10-20	High-Voltage (AC & DC) Test Units; 8p; Cat. No. SB-HV-1 (Multi-Amp)	10-28	High Voltage Test Equipment and Power Supplies; 12p; Cat. No. 62 (Peschel)
10-11	AC-DC Tong Test Ammeters; 8p; Cat. No. TT-961 (Columbia Electric)	10-21	Circuit Breaker Testers; 16p; Cat. No. SB-CB-1 (Multi-Amp)	10-29	Adjustable-Speed Drives; 16p; Cat. No. 31061 (Servo-Tek)
10-12	Fire Alarm Systems; 28p; Cat. No. 131A (Couch)			10-30	Speed Measurement; 16p; Cat. No. 1860R (Servo-Tek)
10-13	Hospital Signaling Systems; 18p; Cat. No. 137 (Couch)			10-31	Testers; 50p; Cat. No. C1 (Slaughter)
				10-32	Security and Signaling Systems; 100p (Spurling)

SECTION 11. HEATING & COOLING EQUIPMENT

11A. ELECTRIC SPACE HEATERS

1. Wall panels & units
2. Ceiling panels & units
3. Ceiling & floor cables
4. Baseboard units
5. Floor furnaces & heaters
6. Duct heaters
7. Steam radiators
8. Unit heaters, forced air
9. Central furnaces
10. Portables
11. Heated floor mats
12. Heater & lighting fixture combined
13. Cabinet convectors, heaters & ventilators
14. Bathroom heaters
15. Infrared spot heaters
16. Explosion-proof heaters
17. Drive-in theater car heaters
18. Crane cab heaters
19. Hot water baseboard units

For space heating of buildings. Industrial and commercial heating equipment is listed under "Electric Process Heating." See also "Heat Pumps."

- A K Electric Corp 231 Front St Brooklyn 1 NY (10)
- Acme Electric Heating Corp 99 Reading St Boston 19 Mass (1-4-7-10)
- Adam (Frank) Electric Co 3647 Windsor Pl St Louis Mo (1)
- Aeroil Products Co Inc 69 Wesley St South Hackensack NJ (8)
- Allied Precision Industries 425 Stevens St (P O Box 149) Geneva Ill (1-10)
- American Air Filter Co Inc 215 Central Ave Louisville 8 Ky (8-10-13)
- American-Standard Air Conditioning Div Electric Heating Dept 40 W 40 St New York 18 NY (1-2-3-4-8-10-12-14-15)
- American Tool & Engineering 2105 Moore St San Diego Calif (4)
- Ampere Industries 60 Boston St Newark 3 NJ (2-4-10)
- Anchor Mfg Co P O Box 959 Manchester NH (4)
- Apextro Products Co 1821 N Eastlake Ave Los Angeles 31 Calif (10-14-15-18)
- Arvin Industries Inc Columbus Ind (1-2-3-4-8-10-14)
- Atlas Tool and Mfg Co 5147 Natural Bridge Ave St Louis 15 Mo (10)
- BERKO ELECTRIC MFG CORP 182-20 Liberty Ave Jamaica 12 NY (1-2-4-8-10)—ADV PG 122
- Berns Air King Corp 3050 N Rockwell St Chicago Ill (1-2-10-12-14)
- Brown Mfg Co Inc Hartford Wis (8-12-14)
- Brown Products Corp 1090 Springfield Rd Union NJ (4)
- Can Arm Corp P O Box 156 Champlain NY (1-4-10)
- Carrier Corp Carrier Parkway Syracuse 1 NY (9)
- Cavalier Corp Electric Heating Div 343 W First St Chattanooga Tenn (1-3-4-10-14)
- Celheat Inc 5212 Homberg Drive (P O Box 10066) Knoxville Tenn (1-3-4-5-8-10-14)
- Circle Air Industries Inc 244 Herkimer St Brooklyn 16 NY (1-4-8-10)
- Continental Radiant Glass Heating Corp 4 W 40 St New York 18 NY (1-4-10)
- Cory Corp 3200 W Petersen Ave Chicago 45 Ill (10)
- Diamond Wire & Cable Co 445 Park Ave Syracuse 10 Ill (3)
- Dixie Raydiant Electric Heat Corp 66 Eleventh St N E Atlanta 9 Ga (1-2-3-10)
- Dominion Electric Corp 150 Elm St Mansfield Ohio (10-14)
- Easy-Heat Inc 209 E Michigan St New Carlisle Ind (3)
- Economaster Sales Inc P O Box 1136 Nashville 3 Tenn (10-14)
- Electrend Products Corp State & Water Sts St Joseph Mich (1-8)
- Electric Steam Radiator Corp 1 Electric Ave Paris Ky (7)
- Electro-Ray Mfg Co 8310 N E Highway 99 Vancouver Wash (4)
- Electromode Div Commercial Controls Corp P O Box 1052 Rochester 3 NY (1-3-4-8-9-10-13 thru 18)
- Electrovector Inc 475 Flushing Ave Brooklyn 5 NY (1-4)
- Emerson Electric Mfg Co 8100 Florissant Ave St Louis 36 Mo (1-3-4-10-12-14)
- Emerson-Pryne Co Towne Ave at Monterey (P O Box 698) Pomona Calif (2)
- Essex Wire Corp Wire & Cable Div 2601 S Adams Marion Ind (3)
- Everwarm Inc 3600 Pleasant Ridge Rd Knoxville Tenn (1-3-4-10-15)
- Gar Wood Industries Inc Wayne Mich (1-2)
- General Alliance Corp 2105 Moore St San Diego Calif (4)
- GENERAL ELECTRIC CO INDUSTRIAL SALES OPERATION 1 River Road Schenectady 5 NY (1-4-6-8-10)—ADV PG 112
- General Electric Co Wiring Device Dept 95 Hathaway St Providence RI (2-3-4-5-8-10-14)
- GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1-2-3-4-8-10-12)—ADV PG 84-85
- Glenn Electric Heater Corp 374 Jelliff Ave Newark NJ (8)
- Guyana Machinery Co Inc Box 150 Logan W Va (1-8-10-18)
- Halo Lighting Products Inc 4201 Grand Ave Chicago 51 Ill (12)
- Hanovia Lamp Div Engelhard Industries Inc 100 Chestnut St Newark 5 NJ (2)
- Heat Controller Inc 900 Wellworth Ave Jackson Mich (6)
- Heatmore Inc 651 Driggs Ave Brooklyn 11 NY (1-2-4-10)
- Hotpoint Div General Electric Co 5600 W Taylor St Chicago 44 Ill (2-4-8-14)
- Hunter Div Robbins & Myers Inc 2500 Frisco Ave Memphis 14 Tenn (1-4-8-10-12-14-15)
- Ilg Electric Ventilating Co 2850 N Pulaski Rd Chicago 41 Ill (8)
- Industrial Engineering & Equipment Co Inc 24 Hanley Industrial Ct St Louis 17 Mo (6)
- International Oil Burner Co 3800 Park Ave St Louis 10 Mo (9-19)
- Interstate Rubber Products Corp 908 Avila St Los Angeles 12 Calif (11)
- Kilbury Mfg Co Inc 14529 Hawthorne Blvd Lawndale Calif (8-9)
- Knapp-Monarch Co Bent & Potomac St Louis 16 Mo (10)
- Kord Mfg Co Inc 4510 White Plains Rd New York 70 NY (10)
- Kritzer Products Div Peerless of America 5800 N Pulaski Rd Chicago 46 Ill (9)
- Litecontrol Corp 36 Pleasant St Watertown 72 Mass (1-2)
- Luminator Inc 120 N Peoria St Chicago 7 Ill (15)
- Markel Electric Products Inc 145 Seneca St Buffalo 3 NY (1-2-4-8-10)
- Martin Stamping & Stove Co Electric Heater Div P O Box 259 Huntsville Ala (1-3-4-5-10)
- Matthews Electric Heater Mfg Co Albertville Ala (1-5-10)
- McGraw-Edison Co Albion Div 704 Clark St N Albion Mich (4)
- Meier Div Lau Blower Co 3525 E Washington St Indianapolis 7 Ind (1-3-4-10-14-15)
- Miami Carey Div Philip Carey Mfg Co Middletown Ohio (8)
- Miskella Infra-Red Co E 73rd & Grand Ave Cleveland 4 Ohio (15)
- Modern Development Co Box 196 Encino Calif (1-2-10-12-14)
- Modernheat Cable Corp P O Box 754 Kingsport Tenn (1-3-4-10)
- Mueiler Climatrol Div Worthington Corp 2005 W Oklahoma Ave Milwaukee 1 Wis (9)
- Muncie Gear Works Inc P O Box 433 Cordele Ga (6-9)
- National Steel Construction Co 500 S Myrtle St Seattle 8 Wash (1-4-14)
- Nutone Inc Madison & Red Bank Roads Cincinnati 27 Ohio (2-8)
- Quartz Products Corp 688 Somerset St (P O Box 628) Plainfield NJ (8)
- Ramco Mfg & Engineering 5413 N E Columbia Blvd Portland Ore (4-9)
- Rayboard Co 2nd and Jefferson Sts (P O Box 507) Martins Ferry Ohio (2)
- Roberson Inc 1539 NE 103 St Seattle 55 Wash (3-8)
- Sair Corp 5290 S Main St Akron 19 Ohio (3-4-10)
- Seaboard Products Corp Electric Heating Div 191 Frelinghuysen Ave Newark NJ (1-4-10-14-15)
- Siebring Mfg Co George Iowa (9)
- Spartan Electric Radiator Corp 1500 W Blanche St Linden NJ (1-4-7-10)
- Sun-Heat Inc 998 E Woodbridge Detroit 7 Mich (1-10)
- Sun-Tron Div Methode Electronics Inc 1700 Hicks Rd Rolling Meadows Ill (1-2-4)
- Sunwarm Inc 1601 Jared Dr (P O Box 266) Kingsport Tenn (1-3-4-10)
- Swan Mfg Co 1801 W 26 St Vancouver Wash (1-4)
- Tennessee Plastics Inc Box 3117 Carroll Reece Branch Johnson City Tenn (1 thru 6-10)
- Thermador Electrical Mfg Co 5119 District Blvd Los Angeles 22 Calif (1-2-4-6-8-10-14)
- Thermal-Aire of America Inc 10 State Street (Room 905) Boston Mass (1-2-4)

Trade-Wind Div Robbins & Myers Inc 7755 Paramount Pa Pico Rivera Calif (1)
Utah Electronics Corp 1124 E Franklin St Huntington Ind (15)
Vulcan Electric Co 88 Holten St Danvers Mass (6-16)
Vulcan Radiator Co 775 Capitol Ave Hartford & Conn (4)
Wesix Electric Heater Co 390 First St San Francisco 5 Calif (1 thru 6-8-10-13 thru 18)
Westchester Brickote Products Co Inc 1528 Williamsbridge Rd NY 61 NY (7)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-4-5-6-8-9-14-15)
●WESTINGHOUSE ELECTRIC SUPPLY CO 3 Gateway Center (Box 448) Pittsburgh 30 Pa (1-4-8-10-14)—ADV PG 2nd cover
Wiegand (Edwin L) Co 7637 Thomas Blvd Pittsburgh 8 Pa (1-3-4-5-6-8-10-13 thru 16-18)
Wing (L J) Mfg Co 303 N Stiles St Linden NJ (8)
Worthington Corp Ampere Station East Orange NJ (8)
Zell-Aire Corp Orton Ave Reading Pa (1-3-4-8)

11B. HEAT PUMPS

Central, packaged, or custom dual-function units for space heating and cooling of buildings.

American Coils Co Route 524-Lakewood Rd Farmingdale NJ
Carrier Corp Carrier Parkway Syracuse 1 NY
Fedders Corp 58-01 Grand Ave Maspeth NY
Forston Co 2117-2119 Judway (P O Box 10231) Houston 18 Tex
General Electric Co Air Conditioning Div Weathertron Dept 5 Lawrence St Bloomfield NJ
General Electric Co Air Conditioning Dept Central Air Conditioner Troup Highway Tyler Tex
General Electric Co Major Appliance Div Room Air Conditioner Dept Appliance Park Louisville 1 Ky
Heat Controller Inc 900 Wellworth Ave Jackson Mich
McGraw-Edison Co Albion Div 704 Clark St N Albion Mich
Mueller Climatrol Div Worthington Corp 2005 W Oklahoma Ave Milwaukee 1 Wis
Muncie Gear Works Inc P O Box 433 Cordele Ga
Perfection Div Hupp Corp 1135 Ivanhoe Rd Cleveland 10 Ohio
Thermador Electrical Mfg Co 5119 District Blvd Los Angeles 22 Calif
Typhoon Air Conditioning Div Hupp Corp 505 Carroll St Brooklyn 15 NY
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa
Worthington Corp Ampere Station East Orange NJ

11C. ELECTRIC PROCESS HEATING EQUIPMENT

1. Electric ovens
2. Electric furnaces
3. Electric steam boilers
4. Dielectric heaters
5. Induction heaters
6. Infrared heaters
7. Heating elements
8. Soil, pipe & snow-melting cable, tape, or mats
9. Wire preheaters
10. Immersion heaters
11. Swimming pool heaters
12. Industrial hotplates
13. Snow-melting mats
14. Engine heaters
15. Drum heaters

Electrical equipment used to provide heat for commercial or industrial processes.

Acme Electric Heating Corp 99 Reading St Boston 19 Mass (1-7-12)
Acra Electric Corp 9901 Pacific Ave Franklin Park Ill (7-15)
Ajax Electric Co 854 Frankford Ave Philadelphia 23 Pa (2)
Ajax Magnethermic Corp 3990 Simon Rd Youngstown 1 Ohio (1-2-5)
Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (1-4-5)

American-Standard Air Conditioning Div Electric Heating Dept 40 W 40 St New York 18 NY (8)
Apxetro Products Co 1821 N Eastlake Ave Los Angeles 31 Calif (6)
Bellevue Industrial Furnace Co 2620 Crane Ave Detroit 14 Mich (1-2)
●BERKO ELECTRIC MFG CORP 182-20 Liberty Ave Jamaica 12 NY (8)—ADV PG 122
Blue M Electric Co 138th & Chatham Sts Blue Island Ill (1-2)
Bryant Electric Co 1421 State St (Box D Barnum St) Bridgeport 2 Conn (1-7-12)
Can Arm Corp P O Box 156 Champlain NY (6-7)
Cellheat Inc 5212 Homberg Drive (P O Box 10066) Knoxville Tenn (8)
Central Scientific Co 1700 Irving Pk Rd Chicago 13 Ill (1)
Coates Electric Mfg Co 3419-11th Ave S W Seattle 4 Wash (1-2-3-7-10-11)
Com-Pak-Ett Mfg Corp 650 Grand St Allegan Mich (10)
Corning Glass Works Corning NY (6-7)
Corona Mfg Corp 11300 Tuxford St Sun Valley Calif (1-6-7)
Cox and Co Inc 115 E 23 St New York 10 NY (8-13)
Cutler-Hammer Inc 228 N 12th St Milwaukee 1 Wis (5-7-10)
Dalton Electric Heating Co 11 Goodhue St Salem Mass (6-7-10)
Despatch Oven Co 619 S E 8th St Minneapolis 14 Minn (1-2-7)
Detroit Electric Furnace Div Kuhlman Electric Co 11400 State Fair Ave Detroit Mich (2)
Djeco Div Djordjevic Engineering Co 1933 N Damen Ave Chicago 47 Ill (4-5)
Dominion Electric Corp 150 Elm St Mansfield Ohio (1)
Doyle (J E) Co 1220 W 6th St Cleveland 13 Ohio (6)
Dry Climate Lamp Corp Greensburg Ind (1-7)
Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (7)
Easy-Heat Inc 209 E Michigan St New Carlisle Ind (8)
Electric Arc Inc 152 Jelliff Ave Newark 8 NJ (1-2-5)
Electric Hotpack Co Inc Cottman Ave at Melrose St Phila 35 Pa (1-2)
Electromode Div Commercial Controls Corp P O Box 1052 Rochester 3 NY (8-13)
Engelhard Industries Inc 113 Astor St Newark 14 NJ (1-2)
Falcon Equipment Co 13th St (Box E-255) New Brighton Pa (1-2-7-9-10)
Fedders Corp 58-01 Grand Ave Maspeth NY (2)
Fostoria Corp N Main St Fostoria Ohio (1-6)
Gem Electro Mfg Co Inc 237 37th St Brooklyn NY (7)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-2-4-5-7-10)
Globar Plant (Electronics Div) Carborundum Co Niagara Falls NY (7)
Grieve-Hendry Co Inc 1350 N Elston Ave Chicago 22 Ill (1-2)
Hanovia Lamp Div Engelhard Industries Inc 100 Chestnut St Newark 5 NJ (6)
Harper Electric Furnace Corp 39 River St Buffalo 2 NY (2)
Hayes (C I) Inc 800 Wellington Ave Cranston 10 RI (1-2-5-7)
Hevi Duty Electric Co 3002 W Burleigh St (P O Box 563) Milwaukee 1 Wis (1-2-7)
Hotpack Corp Cottman Ave at Melrose St Philadelphia 35 Pa (1-2)
Huppert (K H) Co 68 30 S Cottage Grove Ave Chicago 37 Ill (1-2-7)
Hynes Electric Heating Co 708 Colfax Ave Kenilworth NJ (7-10)
Induction Heating Corp 181 Wythe Ave Brooklyn 11 NY (1-4-5)
Industrial Engineering & Equipment Co Inc 24 Hanley Industrial Ct St Louis 17 Mo (7)
Jensen Inc 9331 Freeland Ave Detroit 28 Mich (1)
Kneisley Electric Co 2501-2509 Lagrange St Toledo 3 Ohio (10)
Kuhlman Electric Co P O Box 288 Birmingham Mich (2)
LaRose (W T) & Associates Inc 31 Ontario St Cohoes NY (4)
Leeds & Northrup Co 4970 Stenton Ave Phila 44 Pa (2)
Lindberg Engineering Co 2450 W Hubbard St Chicago 12 Ill (1-2)
Lucifer Furnaces Inc Neshaminy Pa (1-2-7)
Luminator Inc 120 N Peoria St Chicago 7 Ill (6-11)
McGraw-Edison Co Albion Div 704 Clark St N Albion Mich (7)
Mechanical Industries Production Co 217-223 Ash St Akron 8 Ohio (7-10)
Michigan Oven Co 420 Brainard Detroit 1 Mich (1)
Midget Heater & Specialty Co 2801 Pacific Ave Tacoma 4 Wash (7)
Miskella Infra-Red Co E 73rd & Grand Ave Cleveland 4 Ohio (1-6)
Modernheat Cable Corp P O Box 754 Kingsport Tenn (8)
National Steel Construction Co 500 S Myrtle St Seattle 8 Wash (11)
Nelson Electric Mfg Co P O Box 5385 Tulsa Okla (8)
North American Electric Lamp Co 1520 North 13th St St Louis 6 Mo (1-6)

Pereny Equipment Co Inc Tri-Village Sta Columbus 12 Ohio (1-2)
Phillips Mfg Co Inc 8200 Grand Ave Minneapolis 20 Minn (7)
Potter & Rayfield Inc P O Box 1042 Atlanta Ga (1)
Precision Parts Corp 400 N First St Nashville 7 Tenn (3-11)
Pyrosil Inc 1889 Front St Cuyahoga Falls Ohio (1-6-7)
Radcor Inc P O Box 432 Fostoria Ohio (1-2-6)
Reeve Electronics Inc 609 W Lake St Chicago 6 Ill (4-5)
Roberson Inc 1539 NE 103 St Seattle 55 Wash (8)
Robotron Corp 21300 W Eight Mile Rd Detroit 19 Mich (5)
Safeway Heat Elements Inc Middlefield St (P O Box 1109) Middletown Conn (7)
Scientific Electric Inc 105-109 Monroe St Garfield NJ (4-5)
Slebering Mfg Co George Iowa (3-7)
Smith-Gates Corp Farmington Conn (8)
Southeast Lighting Inc 521 E 20 St Charlotte 1 NC (6)
Sta-Warm Electric Co 53 N Chestnut St Ravenna Ohio (2)
Star-A Electric Mfg Co Inc 41 Varick Av Brooklyn 37 NY (7)
Steiner-Jones Co Springfield Rd Union NJ (1)
Sun-Heat Inc 998 E Woodbridge Detroit 7 Mich (6)
Sunwarm Inc 1601 Jared Dr (P O Box 266) Kingsport Tenn (8)
Tec Imports 14525 Bessemer St Van Nuys Calif (6)
Thermal-Aire of America Inc 10 State Street (Room 905) Boston Mass (6)
Thermal American Fused Quartz Co Rt 202 & Change Bridge Rd Montville NJ (10)
Thermal Engineering & Design Co 217 Ash St Akron 8 Ohio (10)
Thermolyne Corp 513 Huff St Dubuque Iowa (2-12)
Tocco Div Ohio Crankshaft Co 3800 Harvard Ave Cleveland 9 Ohio (2-5)
Trent Inc 201-299 Leverington Ave Phila 27 Pa (1-2-7-10)
Triangle Equipment Co Inc 45 River Rd Nutley 10 NJ (1-6)
Trindl Products Ltd 1807-11 S Clark St Chicago 16 Ill (7)
Trippe Mfg Co 133 N Jefferson St Chicago 8 Ill (6)
Tuttle & Kift Inc 1823 N Monitor St Chicago 39 Ill (7)
Ulanet (George) Co 413-15 Market St Newark 5 NJ (7-10-14)
Utah Electronics Corp 1124 E Franklin St Huntington Ind (6)
Vulcan Inc 1186 Broadway New York 1 NY (1-6)
Vulcan Electric Co 88 Holten St Danvers Mass (6-7-10-11-12)
Waage Electric Inc 720 Colfax Ave Kenilworth NJ (7-10)
Walco Electric Co 303 Allens Ave Providence 1 RI (9)
Wattier Electric Mfg Co 1376 Ferguson Ave St Louis 14 Mo (7)
Welcraft Inc 555 N Michigan St Lakeville Ind (7-10)
Wesix Electric Heater Co 390 First St San Francisco 5 Calif (6-7-8-10-11)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (5-6-7-10)
Whitaker (Douglas C) Co Inc 141 E Glenside Ave Glenside Pa (6)
Wiegand (Edwin L) Co 7637 Thomas Blvd Pittsburgh 8 Pa (3-6-7-8-10-11-12-14)
Wil-Son Mfg Co Cloverport Ky (1-6)
Young Bros Co 1831 Columbus Rd Cleveland 13 Ohio (1-4)

11E. AIR CONDITIONERS

1. Industrial & commercial
2. Residential, central unit
3. Residential, room console
4. Wall, built in
5. Window
6. Portable

Equipment using refrigerating-cycle principle to cool air.

Acme Industries Inc 620 N Mechanic St Jackson Mich (1-2)
Air & Refrigeration Corp 439 Madison Ave New York NY (1)
Airtemp Div Chrysler Corp 1600 Webster St Dayton 1 Ohio (1-2-4-5)
American Air Filter Co Inc 215 Central Ave Louisville 8 Ky (1)
American Coils Co Route 524-Lakewood Rd Farmingdale NJ (1-2)

American-Standard Industrial Div Detroit 32 Mich (1)
 Armstrong Furnace Co 851 W Third Ave Columbus 12 Ohio (1-2)
 Carrier Corp Carrier Parkway Syracuse 1 NY (1-2-3-4-5-6)
 Circle Air Industries Inc 244 Herkimer St Brooklyn 16 NY (1-2-4)
 Clarge Fan Co Kalamazoo Mich (1)
 Cool-ette Inc 20080 James Couzens Highway Detroit 35 Mich (1-2-4)
 Curtis Mfg Co Refrigeration Div 1905 Kienlen Ave St Louis 20 Mo (1-2)
 Emerson Electric Mfg Co 8100 Florissant Ave St Louis 36 Mo (5)
 Fedders Corp 58-01 Grand Ave Maspeth NY (1-2-4-5)
 Folsom Co Inc 3104 Oak Lane Dallas 10 Tex (1-2-4)
 Forston Co 2117-2119 Judiway (P O Box 10231) Houston 18 Tex (1-2-5)
 Frick Co Waynesboro Pa (1)
 Frigidaire Div General Motors Corp 300 Taylor St Dayton 1 Ohio (4-5)
 General Electric Co Air Conditioning Div Commercial & Industrial Air Conditioning Dept 5 Lawrence St Bloomfield NJ (1)
 General Electric Co Air Conditioning Dept Central Air Conditioner Troup Highway Tyler Tex (1-2)
 General Electric Co Major Appliance Div Room Air Conditioner Dept Appliance Park Louisville 1 Ky (4-5-6)
 Gibson Refrigerator Sales Corp 515-615 W Williams St Greenville Mich (1-4-5)
 ●GRAYBAR ELECTRIC CO INC 420 Lexington Ave NY 17 NY (1-2-3-5)-ADV PG 2
 Great Northern Mfg Corp 1056 N Wood St Chicago 22 Ill (2)
 Hastings Air Conditioning Co Inc 108 S Colorado Ave Hastings Neb (1-2)
 Heat Controller Inc 900 Wellworth Ave Jackson Mich (1 thru 6)
 Hotpoint Div General Electric Co 5600 W Taylor St Chicago 44 Ill (4-5)
 Hoyt Mfg Corp Forge Rd Westport Mass (1)
 Ilg Electric Ventilating Co 2850 N Pulaski Rd Chicago 41 Ill (1)
 International Oil Burner Co 3800 Park Ave St Louis 10 Mo (2)
 Kauffman Air Conditioning Co 4336 W Pine Blvd St Louis 10 Mo (1 thru 6)
 King Refrigerator Corp 76-02 Woodhaven Blvd Glendale 27 NY (4)
 McGraw-Edison Co Albion Div 704 Clark St N Albion Mich (1 thru 6)
 Mueller Climatrol Div Worthington Corp 2005 W Oklahoma Ave Milwaukee 1 Wis (1-2)
 Munkie Gear Works Inc P O Box 433 Cordele Ga (2)
 Perfection Div Hupp Corp 1135 Ivanhoe Rd Cleveland 10 Ohio (2)
 Quiet-Heat Mfg Corp 46 Oliver St Newark 5 NJ (1-2-4-5)
 Ready-Power Co 11231 Freud Ave Detroit 14 Mich (1-2)
 Remington Corp Remington Air Conditioning Div Willey St Auburn NY (1-3-4-5)
 Thermador Electrical Mfg Co 5119 District Blvd Los Angeles 22 Calif (1-2)
 Trane Co 2nd & Cameron Ave La Crosse Wis (1-2-4)
 Typhoon Air Conditioning Div Hupp Corp 505 Carroll St Brooklyn 15 NY (1-2)
 United States Air Conditioning Corp P O Box 360 Delaware Ohio (1-2)
 Weibull Corp 57-18 Flushing Ave Maspeth 78 LI NY (2-4-5-6)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1 thru 6)
 Whirlpool Corp Benton Harbor Mich (4-5)
 Worthington Corp Ampere Station East Orange NJ (1)

11F. AIR HANDLING EQUIPMENT

1. Blowers
2. Circulating fans
3. Exhaust fans, residential & commercial
4. Exhaust fans, industrial
5. Portable fans
6. Residential fans & lighting fixtures combined
7. Range hoods
8. Induced draft fans

Equipment used for ventilation, exhaust, or circulation of air. See also "Air Conditioners."

Aerovent Fan Co Inc Ash and Block Sts Piqua Ohio (1-2-3-5)
 Air Controls Inc 2310 Superior Ave Cleveland 14 Ohio (2-3-4-5)
 Air-Marine Motors Inc East Bethpage Rd Plainville NY (1-2)
 Airfan Engineering Co 7401 Telegraph Rd Los Angeles 22 Calif (1-3)

Allen Cooler & Ventilator Inc 704 Woodward St (P O Box 217) Rochester Mich (1-2-3-4)
 Alliance Mfg Co Inc Lake Park Blvd Alliance Ohio (5)
 American Air Filter Co Inc 215 Central Ave Louisville 8 Ky (1-2-3-7)
 American Cooler Corp 3604 Mayflower St (P O Box 2300) Jacksonville 3 Fla (2-3-4)
 American-Standard Industrial Div Detroit 32 Mich (1-3-4)
 Ammerman Co Inc P O Box 182 Stillwater Minn (1-2-3-5-8)
 Arex Co 612 N Michigan Ave Chicago 11 Ill (2-3)
 Argo Products Co 3500 Goodfellow St Louis 20 Mo (2-3-4-5)
 Atlas Mineral Products Co Mertztown Pa (4)
 Atlas Tool and Mfg Co 5147 Natural Bridge Ave St Louis 15 Mo (4-5)
 Baldor Electric Co 4353 Duncan Ave St Louis 10 Mo (2-3-4-5)
 Bar-Brook Mfg Co Inc 6133-35 Linwood Ave Shreveport La (2-3-4)
 Berns Air King Corp 3050 N Rockwell St Chicago Ill (1-2-3-4-5-7)
 Bertram (Harvey P) Co 1439 Freeman Cincinnati Ohio (1-2-3-5-8)
 Broan Mfg Co Inc Hartford Wis (4-6-7)
 Buffalo Forge Co 490 Broadway Buffalo 5 NY (1-2-3-4)
 Burt Mfg Co 936 S High St Akron 11 Ohio (3-4)
 Chelsea Fan and Blower Co 639 South Ave Plainfield NJ (1-2-3-4-5)
 Chicago Blower Corp 9867 Pacific Ave Franklin Park Ill (1-2-3)
 Circle Air Industries Inc 244 Herkimer St Brooklyn 16 NY (1)
 Clarge Fan Co Kalamazoo Mich (1-2-3)
 Commercialaire Corp of America 840 E 98 St Brooklyn 36 NY (1 thru 5)
 Coppus Engineering Corp 344 Park Ave Worcester 10 Mass (1-5)
 Cory Corp 3200 W Petersen Ave Chicago 45 Ill (5)
 Dana Fan & Blower Corp 2644 Colerain Ave Cincinnati 14 Ohio (3-4)
 Davidson Fan Co 213 California St Newton Mass (3)
 Dayton Electric Mfg Co 5959 W Howard St Chicago 48 Ill (1 thru 5)
 DeBothezat Fans Div AMETEK Inc East Moline Ill (2-3-5)
 DeVilbiss Co 300 Phillips Ave Toledo 1 Ohio (3)
 Diehl Mfg Co 1187 Finnerde Ave Somerville NJ (2-3-4)
 Dominion Electric Corp 150 Elm St Mansfield Ohio (3-4-5)
 Electric Indicator Co Inc Camp Ave Springdale Conn (1-2-3)
 Elliott Co Jeannette Pa (1)
 Emerson Electric Mfg Co 8100 Florissant Ave St Louis 36 Mo (2-4-5-7)
 Emerson-Pryne Co Towne Ave at Monterey (P O Box 698) Pomona Calif (1-3-4)
 Fasco Industries Inc Davis & Toppin Sts Rochester 2 NY (1-2-3-4-5-7-8)
 Fort Worth Steel & Machinery Co 3600 McCart Street P O Box 1038 Fort Worth 1 Texas (3)
 Frigid Inc 1250 Rockaway Ave Brooklyn 36 NY (1 thru 5)
 Garden City Fan & Blower Co 801 N Eighth St Niles Mich (1-2-3)
 General Blower Co 8642 Ferris Ave Morton Grove Ill (1-2-3-5-8)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 7)-ADV PG 84-85
 Globe Industries Inc 1784 Stanley Ave Dayton 4 Ohio (1-2)
 Graybar Electric Co Inc 420 Lexington Ave NY 17 NY (1-2-3-4-5)
 Hamilton Fan & Blower Co 2644 Colerain Ave Cincinnati 14 Ohio (1-2-3-4)
 Hartzell Propeller Fan Co 5 Englert Ave Piqua Ohio (1-2-3-5)
 Heinze Electric Co 685 Lawrence St Lowell Mass (1)
 Hirschman-Pohle Co Inc 300 Lent Ave Le Roy NY (3)
 Hunter Div Robbins & Myers Inc 2500 Frisco Ave Memphis 14 Tenn (2-3-4-5)
 Ilg Electric Ventilating Co 2850 N Pulaski Rd Chicago 41 Ill (1-2-3-4-5)
 IMC Magnetics Corp 570 Main St Westbury NY (1)
 Industrial Plastic Fabricators Inc Endicott St Norwood Mass (1-3)
 International Oil Burner Co 3800 Park Ave St Louis 10 Mo (4)
 Iona Ventilator Co Inc 2821-29 W Dauphin St Phila 32 Pa (2-3)
 Jeffrey Mfg Co 832 N 4th St Columbus 16 Ohio (1-3)
 Joy Mfg Co H W Oliver Bldg Pittsburgh 22 Pa (1-2-3)
 Kisco Co Inc 2414 DeKalb St St Louis 4 Mo (5)
 Kord Mfg Co Inc 4510 White Plains Rd New York 70 NY (4-5)
 Lau Blower Co 2027 Home Ave Dayton 7 Ohio (1-2-3-4-5)
 Lehigh Fan & Blower Div Fuller Co Catasauqua Pa (3-8)
 Leigh Building Products Coopersville Mich (3)
 Markel Electric Products Inc 145 Seneca St Buffalo 3 NY (5)
 Martin Fan & Blower Co 4634 W 21st Pl Chicago 50 Ill (1-2-3-4-5)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1)

Marvin Electric Mfg Co 648 Santa Fe Ave Los Angeles 21 Calif (4)
 McLarty Systems 2600 Dickman Rd Battle Creek Mich (3-5-8)
 McLean Engineering Laboratories 70 Washington Rd (P O Box 228) Princeton NJ (2-3-4)
 Meier Div Lau Blower Co 3525 E Washington St Indianapolis 7 Ind (2-3-4)
 Miami Cabinet Div Philip Carey Mfg Co 1700 Grand Ave Middletown Ohio (4-7)
 Miami Carey Div Philip Carey Mfg Co Middletown Ohio (4-7)
 National Engineering & Mfg Co 16th & Lamine Sts Sedalia Mo (2-3-4-5)
 Norky Mfg Corp P O Box 669 Covington Ky (3-4)
 Northern Blower Div Buell Engineering Co 6434 Barberton Ave Cleveland 2 Ohio (3)
 Nutone Inc Madison & Red Bank Roads Cincinnati 27 Ohio (4-7)
 Peerless Electric Div H K Porter Co Inc 1401 W Market St Warren Ohio (1 thru 4)
 Perfect-Line Mfg Corp Old Country Rd & Railroad Ave P O Box 65 Hicksville LI NY (4)
 Phelps Fan Mfg Co 715 Thomas St Little Rock Ark (2-3-4)
 Power Line Fan Co Plainfield NJ (3)
 Progress Mfg Co Inc Castor Ave & Tulip St Phila 34 Pa (4-6-7)
 Reed Unit Fans Inc 501 N St Patrick St New Orleans La (2-3-4-5)
 Reynolds Electric Co 3000 River Rd River Grove Ill (2-5)
 Rich (Phil) Fan Mfg Co Inc 2900 Caroline Houston 4 Texas (2-3-4-5)
 Ripley Co Inc Factory St Middletown Conn (1)
 Robbins & Myers Inc 1345 Lagonda Ave Springfield Ohio (1-2-3-4)
 Roto-Beam 1755-57 N Keeler Ave Chicago 39 Ill (4)
 Shallicross Controls Inc 2217-21 N 31 St Milwaukee 8 Wis (1)
 Siebring Mfg Co George Iowa (2-3)
 Signal Electric Div King-Seely Corp 1800 13th St Menominee Mich (2-3-4)
 Simpson Co 1470 Doolittle Dr San Leandro Calif (4)
 Skill Corp 5033 Elston Ave Chicago 30 Ill (1)
 Small Motors Inc 2076 Elston Ave Chicago 14 Ill (1)
 Stamford Fan Co Inc 4 South St Stamford Conn (1-3-8)
 Stanat Mfg Co Inc 524 Shames Dr Westbury NY (1)
 Standard Electric Mfg Co Inc Haddon Ave West Berlin NJ (1-2-3-4)
 Sterling Blower Co 791 Windsor St Hartford Conn (1-3)
 Stewart Industries Inc 320 E St Joseph St Indianapolis 2 Ind (4-7)
 Trade-Wind Div Robbins & Myers Inc 7755 Paramount Pl Pico Rivera Calif (1-3-4-7)
 Trane Co 2nd & Cameron Ave La Crosse Wis (3)
 United Blower Co Inc 193 Centre St NY 13 NY (1)
 United Electric Motor Co 178 Centre St NY 13 NY (1)
 United States Air Conditioning Corp P O Box 360 Delaware Ohio
 Valley Fan Mfg Co Box 206 Fort Valley Ga (2-3-4-5)
 Ventrola Mfg Co 501 S Chestnut St Owosso Mich (4)
 Viking Div Lau Blower Co 5601 Walworth Ave Cleveland 2 Ohio (1)
 West Wind Corp 1800 Airport Way Seattle 4 Wash (1-4-5)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-2-3-5-6-8)
 Westinghouse Electric Corp Sturtevant Div Damon St Hyde Park Boston 36 Mass (1-3)
 Wing (L J) Mfg Co 303 N Stiles St Linden NJ (1-3-8)
 Wind-Way Fan & Ventilator Co 531 St Joseph St New Orleans 12 La (2-3-4)
 Worthington Corp Ampere Station East Orange NJ (1)

1. Humidifiers
 2. Dehumidifiers
 3. Air purifiers
 4. Air ionizers

For control of air moisture content and characteristics.

Air & Refrigeration Corp 439 Madison Ave New York City NY (2)
 Arkon Products Co P O Box 3501 Cleveland 18 Ohio (1)
 Armstrong Furnace Co 851 W Third Ave Columbus 12 Ohio (3)
 Associated Mills 307 W Monroe St Chicago 6 Ill (1-3-4)
 Bahnon Co 1001 S Marshall St Winston-Salem NC (1)
 Berns Air King Corp 3050 N Rockwell St Chicago Ill (2)

Burgess Vibrocrafters Inc Grayslake Ill (1)
Carrier Corp Carrier Parkway Syracuse 1 NY (2)
Cory Corp 3200 W Petersen Ave Chicago 45 Ill
(1-2-3)
Damp-Chaser Inc 1404 Spartanburg Hwy Hender-
sonville NC (2)
Despatch Oven Co 619 SE 8th St Minneapolis 14
Minn (2)
Dryomatic Co 715 N Fayette St (P O Box 591)
Alexandria Va (2)
Ebc Mfg Co 265 N Hamilton Rd Columbus 13
Ohio (2)
Emerson Electric Mfg Co 8100 Florissant Ave St
Louis 36 Mo (6)
Fedders Corp 58-01 Grand Ave Maspeth NY (3)
Gibson Refrigerator Sales Corp 515-615 W Wil-
liams St Greenville Mich (1-2)
Maertel (Walter) Co 2840 4th Ave So Minneapolis
Minn (2)
Hayes (C I) Inc 800 Wellington Ave Cranston 10
RI (2)
Heat Controller Inc 900 Wellworth Ave Jackson
Mich (2)
Hoyt Mfg Corp Forge Rd Westport Mass (1)
Infra Corp 66 S Main Clarkston Mich (3-4)
Kauffman Air Conditioning Co 4336 W Pine Blvd
St Louis Mo (1-2-3)
McGraw-Edison Co Albion Div 704 Clark St N
Albion Mich (1-2-3)
Minneapolis-Honeywell Regulator Co 2753 Fourth
Ave S Minneapolis 8 Minn (3)
Mitchell Mfg Co 3200 W Peterson Ave Chicago
45 Ill (2)
Mueller Climatrol Div Worthington Corp 2005 W
Oklahoma Ave Milwaukee 1 Wis (1-3)
Progress Mfg Co Inc Castor Ave & Tulip St Phila
34 Pa (3)
Remington Corp Remington Air Conditioning Div
Willey St Auburn NY (2)
Southern New England Ultraviolet Co Newfield St
Middletown Conn (3)
Supreme Electric Products Co 194 Vassar St
Rochester 7 NY (1)
Suttle Equipment Corp 135 S LaSalle St Chicago
3 Ill (1)

Viking Div Lau Blower Co 5601 Walworth Ave
Cleveland 2 Ohio (1)
Walton Laboratories Inc 1186 Grove St Irvington
11 NJ (1)
Wesix Electric Heater Co 390 First St San Fran-
cisco 5 Calif (2-4)
Westinghouse Electric Corp P O Box 2278 Pitts-
burgh 30 Pa (1-2-3-4)
Westinghouse Electric Corp Sturtevant Div Damon
St Hyde Park Boston 36 Mass (2-3)
Whirlpool Corp Benton Harbor Mich (2)

- 11-3 Room Air Conditioners; 12p; Cat. No. LL-476 (Airtemp)
- 11-4 Breeze Conditioning Systems; 36p (Ameri-can Coolair)
- 11-5 Electric-Warm Electric Heating Equipment; 8p; Cat. No. EW3-R (American-Standard)
- 11-6 Cooling Fans; 8p; Cat. No. B (Berns)
- 11-7 Residential Ventilating Equipment; 12p; Cat. No. F (Berns)
- 11-8 Ventilating Range Hoods; 12p; Cat. No. E (Berns)
- 11-9 Strip Heaters; 12p; Cat. No. C-300 (Bryant)
- 11-10 Air Blowers & Fans; 30p (Electric Indi-cator)
- 11-11 Ventilators & Range Hoods; 20p; Cat. No. VH-62-150M (Fasco)
- 11-12 Propeller Fans; 16p; Cat. No. CFJ-160 (Hamilton)
- 11-13 Electric Heaters for Storage Tanks; 8p; Cat. No. 202A (Hynes)
- 11-14 Attic Fans; 12p (Lau)
- 11-15 Infrared Design Manual; 14p; Cat. No. 115 (Luminator)
- 11-16 Electric Infrared Ovens; 16p; Cat. No. BRG-115 (Radcor)
- 11-17 Industrial Electric Heating Equipment; 34P (Sta-Warm)
- 11-18 Electric Heating Units; 36p; Cat. No. VG-202 (Vulcan)

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Num-bers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
11-1	Fans; 30 p (Air Marine)
11-2	Blowers; 52p (Air Marine)

SECTION 12. TOOLS, SUPPLIES & EQUIPMENT

12A. LINEMEN'S TOOLS & ACCESSORIES

1. Climbing equipment
2. Disconnect sticks
3. Hoists, jacks, gins & winches
4. Pike poles and tongs
5. Protective clothing & equipment
6. Tamping, digging & trenching hand tools
7. Tool pouches, buckets & accessory bags
8. Tree trimmers & pruners
9. Wire-strimming equipment
10. Hot line tools
11. Ladders
12. Insulated jumpers
13. Safety grounding equipment

Heavy mobile pole line equipment is listed under "Line Trucks & Mobile Equipment" in Section 1.

Adams Engineering Co 31711 Solon Rd Solon Ohio (3)
Bartlett Mfg Co 3049 E Grand Blvd Detroit 2 Mich (8)
Bashlin (W M) Co Bashlin Bldg Greve City Pa (1-5-7-8-13)
Bodendieck Tool Co P O Box 499 Taylorville Ill (2-3-4-8-10-11-12-13)
Buffalo Machine Mfg Co 586 Tonawanda St Buffalo 7 NY (9)
Burdry Corp Norwalk Conn (10)
Champion DaArment Tool Co South Main St Meadville Pa (7)
Chance (A B) Co 210 N Allen St Centralia Mo (2-3-4-6-7-8-10-11-12-13)
Charleston Rubber Co Stark Industrial Park Charles-ton SC (5)
Chisholm-Moore Hoist Div Columbus McKinnon Corp 6072 Fremont Ave Tonawanda NY (3)
Coffing Hoist Div Duff-Norton Co P O Box 1719 Charlotte 1 NC (3)
Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa (3)
David's Gloves Inc 21 W Pleasant St Springfield Ohio (5)
Davis Emergency Equipment Co Inc 45 Halleck St Newark 4 NJ (5-7)
Dicke Tool Co 1201 Warren Ave Downers Grove Ill (4-6-8)
Distribution & High Line Specialties Co 2100 Del Norte St Louis 17 Mo (9)
Dorsey (John E) Co 570 E First St Boston 27 Mass (5)

Duff-Norton Co P O Box 1719 Charlotte NC (3)
Fairfield Industries Inc Passaic Ave & Pier Lane Caldwell NJ (3)
●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (1 thru 10)—ADV PG 84-85
General Scientific Equipment Co Limekiln Pike & Williams Ave Philadelphia 50 Pa (5-7)
Goodall Rubber Co 445 Whitehead Rd Trenton NJ (5)
Handy Angle Div Lug-All Co 355 Lancaster Ave Haverford Pa (3)
Hendrix Wire & Cable Corp Milford NH (9)
Highway Trailer Industries Inc 405 E Fulton St Edgerton Wis (3)
Holam Corp 4100 W 150 St Cleveland 35 Ohio (3-6)
Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (6-9)
Hunt-Pierce Corp 5W Meadow St Milford Conn (8-9)
Hunter Tools 9851 Alburts St Santa Fe Springs Calif (7)
Ideas Inc 214 Ivinson Ave Laramie Wyo (3)
Joslyn Mfg & Supply Co 3700 S Morgan St Chi-cago 9 Ill (3-4-6-8)
Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo (2-6-8)
King Mfg Corp 3152 W Chicago 22 Ill Chicago 22 Ill (3)
●KLEIN (MATHIAS) & SONS 7200 McCormick Rd Chicago 45 Ill (1-3-7-9)—ADV PG 90
Kline Savidge Co Inc 163 N Third St Phila 6 Pa (1-7)
LeTourneau (RG) Inc 2399 S MacArthur Long-view Tex (3)
Line Material Industries McGraw-Edison Co 700 W Michigan St Milwaukee Wis (2-6-9)
McCabe-Powers Body Co 5900 N Broadway St Louis 15 Mo (3)
Memco Engineering & Mfg Co Inc Commack LI NY (13)
Miller Equipment Co Inc 13th & New Sts Frank-lin Pa (1-7)
Miller-Robinson Co 7007 Avalon Blvd Los Angeles 3 Calif (8)
Mine Safety Appliances Co 201 N Braddock Ave Pittsburgh 8 Pa (1-5-7)
Mitchell Industries Inc Box 17 Municipal Airport Mineral Wells Tex (1)
Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif (7)
Remington Arms Co Inc 939 Barnum Ave Bridge-port 2 Conn (6)
Robot Industries Inc 7041 Orchard St Dearborn Mich (3)

S & C Electric Co 6601 Ridge Blvd Chicago 26 Ill (2-10)
Safety Live Line Tool Co 973 86th Ave Oakland 21 Calif (2-3-4-7-9-10)
Sasgen Derrick Co 3101 Grand Ave Chicago Ill (3)
Shaw-Box Crane & Hoist Div Manning Maxwell & Moore Inc Muskegon Mich (3)
Sherman & Reilly Inc 1 Broad St Chattanooga 2 Tenn (9)
Silent Hoist & Crane Co 841-63rd St Brooklyn 20 NY (3)
Snyder (M L) & Son Inc 1897 E York St Phila 25 Pa (5)
Southern Electrical Equipment Co 308 West Bland at Mint St Charlotte 3 NC (2)
Surety Rubber Co North High St Carrollton Ohio (5)
Teista Corp 1700 Industrial Rd San Carlos Calif (9)
Templeton Kenly & Co Gardner Rd Broadview Ill (3)
Thomas & Betts Co 36 Butler St Elizabeth 1 NJ (10)
Utilities Safety Supply Co Inc Jefferson St at Highway 50 Lee's Summit Mo (1-5-7)
Utilities Service Co Grape & 7th St Allentown Pa (4)
Watteredge Co 19629 West Lake Rd Rocky River 16 Ohio (9)
Wilson Rubber Co 1200 Garfield Ave SW Canton 6 Ohio (5)
Wiss (J) & Sons Co 38 Littleton Ave Newark 7 NJ (8)

12B. WIRE & CABLE TOOLS & EQUIPMENT

1. Benders, cable & strand
2. Cutting, stripping & splicing tools
3. Wire gages
4. Pulling-in grips, guides, jacks & winches
5. Wire reels, lifts, stands & carts
6. Pressure-connector tools
7. Staplers
8. Twisters
9. Wire measurers
10. Vulcanizing equipment
11. Fish tape, grips, pullers, reels & leadors
12. Wire installation guns

AMP Inc Eisenhower Blvd Harrisburg Pa (2-6)
Adams Engineering Co 31711 Solon Rd Solon
Ohio (4-5)
Allen Iron & Steel Co P O Box 550 Norristown
Pa (5-9)
Aluminum Co of America 1501 Alcoa Bldg Pitts-
burgh 19 Pa (6)
American Electrical Heater Co 6110 Cass Ave
Detroit 2 Mich (2)
American Pulley Co 4200 Wissahickon Ave Phila-
delphia 29 Pa (5)
Anthony (F M) Co 773 University Ave Berkeley 10
Calif (2-6)
Appleton Electric Co 1701-59 Wellington Ave Chi-
cago 13 Ill (11)
Ark-Les Switch Corp 51 Water St Watertown
Mass (6)
Arrol Corp Foot of Bower St Montgomery Pa
(11)
Arrow Fastener Co Inc 1 Junius St Brooklyn 12
NY (7)
Artes Engineering Co 2757 S 28 St Milwaukee 46
Wis (2-9)
Barth Corp 12650 Brookpark Rd Cleveland 30
Ohio (4-11)
Bashlin (W M) Co Bashlin Bldg Grove City Pa
(4)
Bay-Tronic Co 43 Evergreen St Bayonne NJ (2-8)
Blackhawk Industrial Products Co Butler Wis
(2-11)
Bodendieck Tool Co P O Box 499 Taylorville Ill
(2)
●BRIEGL METHOD TOOL CO 104 N E First St
Galva Ill (6)—ADV PG 86
Buchanan Electrical Products Corp 434 U S Route
22 Hillside NJ (2-6)
Burbank Electrical Products 215 W Palm Ave P O
Box 7 Burbank Calif (2-11)
Burndy Corp Norwalk Conn (3-6)
Cam-Lok Div Empire Products Inc 9213 Blue Ash
Rd Cincinnati 42 Ohio (2-4-10)
Chicago Pneumatic Tool Co 6 E 44 St NY 17 NY
(4)
Columbia Products Inc Wrightsville Pa (5-9)
Cope (T J) Div Rome Cable Corp Third & Walnut
Sts Collegeville 5 Pa (1-4-11)
Crescent Tool Co 200 Harrison St Jamestown NY
(4)
Davis Electric Co 28 Parker St Wallingford Conn
(9)
Diamond Expansion Bolt Co Inc 500 North Ave
Garwood NJ (2)
Dicke Tool Co 1201 Warren Ave Downers Grove
Ill (4-5)
Duff-Norton Co P O Box 1719 Charlotte NC (5)
ETC Inc 990 E 67 St Cleveland 3 Ohio (2-6)
Eraser Co Inc 1068 S Clinton St Syracuse 4 NY
(2-8)
Ericson Mfg Co 5209 Euclid Ave P O Box 1401
Cleveland 3 Ohio (5)
●FAIRFIELD INDUSTRIES INC Passic Ave & Pier
Lane Caldwell NJ (4)—ADV PG 126
Fullman Mfg Co 1209-1215 Jefferson St Latrobe
Pa (11)
G-C Electronics Co 400 S Wyman St Rockford Ill
(2)
General Hardware Mfg Co Inc 80 White St NY 13
NY (2-3)
Gleason Reel Corp 740 N Plankinton Ave Mil-
waukee 3 Wis (5)
●GRAYBAR ELECTRIC CO INC 420 Lexington Ave
NY 17 NY (2-4-6)—ADV PG 2
Greenlee Tool Co 2136 Twelfth St Rockford Ill
(4)
Heller Roberts Instruments Corp Industrial Fastener
Div 700 Jamaica Ave Brooklyn 8 NY (7)
Highway Trailer Industries Inc 405 E Fulton St
Edgerton Wis (4)
Holan Corp 4100 W 150 St Cleveland 35 Ohio
(4-5)
Holub Industries Inc 442 Elm St Sycamore Ill
(2-11)
Hunt-Pierce Corp 59 Meadow St Milford Conn
(9)
Hunter Tools 9851 Alburts St Santa Fe Springs
Calif (2)
Husky Products Inc 5300 Vine St Cincinnati 17
Ohio (4)
Hykon Mfg Co 163 E State St (P O Box 923 EP)
Alliance Ohio (4-5-9)
●IDEAL INDUSTRIES INC 5136 Park Ave Sycam-
ore Ill (2-6-11)—ADV PG 92
Ideas Inc 214 Ivinson Ave Laramie Wyo (5)
Industrial Electric Reels Inc 1500 Chicago St
Omaha 2 Neb (5)
Interstate Drop Forge Co Special Products Div
4051 N 27 St Milwaukee 16 Wis (2)
Jet Line Products Inc 305 Foster Ave Charlotte
NC (11-12)
Joslyn Mfg & Supply Co 3700 S Morgan St Chi-
cago 9 Ill (6)
Joy Mfg Co Electrical Products Div 338 S Broad-
way New Philadelphia Ohio (10)
Kearney (James R) Corp 4236 Clayton Ave St
Louis 10 Mo (6)
Kellems Co Inc 15 Williams St Stonington Conn
(4-11)
King Mfg Corp 3152 W Chicago 22 Ill Chicago
22 Ill (4)
Klein (Mathias) & Sons 7200 McCormick Rd Chi-
cago 45 Ill (2-4-8-11)
LaRaus Mfg Co Inc LeRoy NY (5)
Lew Electric Fittings Co 627 W Lake St Chicago 6
Ill (11)
Line Material Industries McGraw-Edison Co 700
W Michigan St Milwaukee Wis (1-4)

Lint (Clyde W) 2323 W 18 St Chicago 8 Ill
(5-9-11)
Madison Equipment Co 5405 Detroit Ave Cleveland
2 Ohio (2-5-9-11)
Magnesium Co of America 155 S E 10th Ave Hia-
leah Fla (5)
Martindale Electric Co 1383 Hird Ave Cleveland 7
Ohio (2)
Marvel Rack Mfg Co Inc 96 43rd Ave NE Min-
neapolis 21 Minn (9)
Miller Electric Mfg Co Inc 718 S Bounds St Ap-
pleton Wis (13)
Miller Equipment Co Inc 13th & New St Franklin
Pa (2)
Milwaukee Parts Corp 607-15 S Sixth St Mil-
waukee 4 Wis (2)
Mine Safety Appliances Co 201 N Braddock Ave
Pittsburgh 8 Pa (2)
Minneapolis Electric & Construction Co 45 Glenwood
Ave Minneapolis 3 Minn (9)
National Electro Dynamics Corp 4917 St Elmo Ave
Bethesda 14 Md (2-6)
Network Industries Inc P O Box 397 Bayonne NJ
(2-8)
Olympic Instruments Inc Vashon Wash (5-9)
Potter & Rayfield Inc P O Box 1042 Atlanta Ga
(2)
Rattan Mfg Co 10 Wall St (P O Box 1745) New
Haven 7 Conn (11)
Richards (J R) Co P O Box 482 Carnegie Pa (11)
Roll-A-Reel Co 4630 Reading Rd Cincinnati 29
Ohio (5)
Sherman (H B) Mfg Co 22 Barney Battle Creek
Mich (6)
Snap-On-Tools Corp 8028 28th Ave Kenosha Wis
(2)
Speedex Mfg Co 418 S Wyman St Rockford Ill
(2)
Starrett (LS) Co Athol Mass (3)
Steel City Electric Co 1207 Columbus Ave Pitts-
burgh 33 Pa (11)
Steel Electric Products Co Inc 5602 18th Ave
Brooklyn 4 NY (11)
Suttle Equipment Corp 135 S LaSalle St Chicago
3 Ill (5)
Templeton Kenly & Co Gardner Rd Broadview Ill
(4)
Thomas & Betts Co 36 Butler St Elizabeth 1 NJ
(1-2-6)
Thomas Instrument Co Box 41 Liverpool Rd
Phoenix NY (2)
Tomic Sales & Engineering Co 20000 Sherwood Ave
Detroit 34 Mich (2)
Triton Mfg Co Inc East Haddam Conn (2)
Ulrica Div Kelsey-Hayes Co Ulrica 4 NY (2)
Vaco Products Co 317 E Ontario St Chicago 11
Ill (6)
Waldman (John J) Co 477 Atlantic Ave Brooklyn
17 NY (9)
Whitaker Reel Mfg Co 3704 Jackson St Monroe
La (5)
Wiss (J) & Sons Co 33 Littleton Ave Newark 7
NJ (2)
Woodhead (Daniel) Co 15 N Jefferson St Chicago
6 Ill (5)
Yorkville Metal Products Co 627 Greenwich St
New York 14 NY (2)

12C. RACEWAY TOOLS & EQUIPMENT

1. Benders & hickies, conduit & EMT
2. Cutters & indenters, conduit & EMT
3. Conduit tool pickups & grapples
4. Knockout punches
5. Conduit measurers
6. Pipe pushers
7. Mandrels
8. Reamers
9. Threaders, stocks & dies
10. Pipe vises, stands & holders
11. Conduit racks
12. Bending gauges
13. Bending and pushing pumps
14. Power drives and takeoffs
15. Pipe benders
16. Duct rodging equipment

Allen Iron & Steel Co P O Box 550 Norristown
Pa (11)
American Pipe Bending Machine Co Inc Poultney
Vt (1)
American Pipe Tool Co 4856 W Kinzie St Chi-
cago 44 Ill (8-9-10)
Ampere Industries 60 Boston St Newark 3 NJ
(6)
Appleton Electric Co 1701-59 Wellington Ave
Chicago 13 Ill (1)
Armstrong Bros Tool Co 5200 W Armstrong Ave
Chicago 46 Ill (8-9-10)
Arrol Corp Foot of Bower St Montgomery Pa
(1)
Athol Machine & Foundry Co 82 South St Athol
Mass (10)
Beaver Pipe Tools Inc 310 Dana N E Warren
Ohio (2-9-14)
Blackhawk Industrial Products Co Butler Wis (1-
4-13)
Briegel Method Tool Co 104 N E First St Galva
Ill (2-10)
C & B Engineering and Fabricating Corp P O Box
8701 Houston Tex (1-5)

Chamorr Mfg Corp 43-63 11th St Long Island
City 1 NY (1)
Collins Machinery Corp 955 Monterey Pass Rd
Monterey Park Calif (2-9)
Cope (T J) Div Rome Cable Corp Third & Walnut
Sts Collegeville 5 Pa (3)
Electri-Flex Co Roselle Ill (10)
Erie Tool Works 12th & Liberty Sts Erie Pa
(2-9-10)
Gardner Bender Co 5448 N 24 Pl Milwaukee 9
Wis (1)
General Electric Supply Co 1260 Boston Ave
Bridgeport Conn (1-2-4-8-9)
General Hardware Mfg Co Inc 80 White St NY 13
NY (8)
Greenlee Tool Co 2136 Twelfth St Rockford Ill
(1-4-6-13-14)
Grinnell Co Inc 260 W Exchange St Providence 2
RI (10)
Hein-Werner Corp 1200 National Ave Waukesha
Wis (1)
Henderson Electric Co 25 Greenwood Ave East
Orange NJ (1)
Hill (Walter P) Inc 22183 Telegraph Rd Detroit
19 Mich (1)
Holub Industries Inc 442 Elm St Sycamore Ill
(8)
Hossfeld Mfg Co 460 W Third St Winona Minn
(1)
Lew Electric Fittings Co 627 W Lake St Chicago 6
Ill (1)
Lidsen of North Carolina Inc 1000 First St Hayes-
ville NC (1)
Lint (Clyde W) 2323 W 18 St Chicago 8 Ill
(1-4-10)
Madison Equipment Co 5405 Detroit Ave Clevel-
and 2 Ohio
Mercury Hydraulics Inc 1632 Wazee St Denver 2
Colo (6)
Midwest Electric Mfg Co 1639 Walnut St Chi-
cago 12 Ill (1)
Mine Safety Appliances Co 201 N Braddock Ave
Pittsburgh 8 Pa (9)
Muncie Gear Works Inc P O Box 433 Cordele
Ga (9)
National Electric Div H K Porter Co Inc Porter
Bldg Pittsburgh 19 Pa (1)
Nye Tool Co 4120-30 Fullerton Ave Chicago 32
Ill (2-4-8-9-10-14)
Oster Mfg Co 1340 E 289 St Wickliffe Ohio
(8-9-10)
Proto Tool Co 2209 S Santa Fe Ave Los Angeles
54 Calif (2)
Rattan Mfg Co 10 Wall St (P O Box 1745)
New Haven 7 Conn (1)
Republic Steel Corp Steel And Tubes Div 224 E
131 St Cleveland 8 Ohio (1-7)
Richards (J R) Co P O Box 482 Carnegie Pa
(1)
●RIDGE TOOL CO 400 Clark St Elyria Ohio
(1-2-8-9-10-14-15)—ADV PG 95-96-97
Salem Tool Co 767 S Ellsworth Ave Salem Ohio
(6)
●SILVEY PIPE BENDER CO 2215 Brighton Ave
Kansas City 27 Mo (1)—ADV PG 118
Spring Load Mfg Corp 6332 Maynard Ave Seattle
Wash (2)
Steel City Electric Co 1207 Columbus Ave Pitts-
burgh 33 Pa (1)
Steel Electric Products Co Inc 5602 18th Ave
Brooklyn 4 NY (1)
Steelduct Co Republic Steel Bldg Youngstown
Ohio (1)
Superior Switchboard & Devices Div Union Metal
Mfg Co P O Box 590 Canton 1 Ohio (16)
Templeton Kenly & Co Gardner Rd Broadview Ill
(6)
Thepitt Mfg Co Gregg & Hammond Sts Carnegie
Pa (1)
Thomas & Betts Co 36 Butler St Elizabeth 1
NJ (1-2)
Toledo-Beaver Tools Inc P O Box 1678 Toledo
3 Ohio (2-8-9-10-14)
Velocity Power Tool Co 201 N Braddock Ave
Pittsburgh 8 Pa (14)
Vickers Inc Tulsa Products Div 731 E First St
Tulsa 20 Okla (14)
Wachs (E H) Co 1525 N Dayton St Chicago 22
Ill (2-14-15)
Wagner Malleable Products Co 222 W Adams St
Chicago 6 Ill (2)
Wells Mfg Co 220 Ninth St San Francisco 3 Calif
(2)
Wheeler Mfg Co Ross Rd Ashtabula Ohio (2)

12D. MATERIALS HANDLING EQUIPMENT

1. Ladders
2. Scaffolds, work towers & platforms
3. Hoists
4. Lift trucks
5. Maintenance trucks
6. Hand trucks
7. Truck bodies & bins
8. Bins, cabinets, shelving & framing angle

9. Office & workshop trailers
10. Jacks & jack screws
11. Tool chests
12. Winches
13. Car pullers

A E Industrial Div Aircraft Armaments Inc P O Box 6853 Baltimore 4 Maryland (3-13)
 Acme Steel Co 135th St & Perry Ave Chicago 27 Ill (6)
 Adams Engineering Co 31711 Solon Rd Solon Ohio (12)
 Allen Iron & Steel Co P O Box 550 Norristown Pa (6-8)
 Allied Mfg & Sales Co 3101 W Grand Ave Chicago 22 Ill (1-2-3-4-5-6)
 Allis-Chalmers Mfg Co 930 S 70th St Milwaukee 1 Wis (4)
 American Pulley Co 4200 Wissahickon Ave Phila 29 Pa (4-5-6-9)
 AUTOMATIC Div of Yale & Towne Mfg Co 101 W 87th St Chicago 20 Ill (4)
 Baker-Ross Inc 602 W McCarty St Indianapolis 6 Ind (2)
 Baltimore Co Lincoln & Garfield Aves West Chester Pa (1-2)
 Beaver-Advance Corp 12th & Factory Sts Ellwood City Pa (2)
 Bernard-Franklin Co Inc Frankford & Torresdale Aves Philadelphia 24 Pa (6-8)
 Blackhawk Industrial Products Co Butler Wis (3)
 Bruhn Steel Products Co 300 E Dunes Highway Chesterton Ind (11)
 Building Service Co 4923 18th Ave S Minneapolis 17 Minn (2)
 Case (J I) Co Racine Wis (4)
 Charles Machine Works Inc P O Box 66 Perry Okla (2)
 Chester Hoist Div National Screw & Mfg Co Lisbon Ohio (3)
 Chisholm-Moore Hoist Div Columbus McKinnon Corp 6072 Fremont Ave Tonawanda N Y (3)
 Clark (George P) Div Cragin & Wilkins Co Inc Fitchburg Mass (4-6)
 Coffing Hoist Div Duff-Norton Co P O Box 1719 Charlotte 1 NC (3)
 CraneVeyor Corp 1240 S Boyle Ave Los Angeles 23 Calif (3)
 Dayton Safety Ladder Co 2337 Gilbert Ave Cincinnati 6 Ohio (1)
 Detroit Hoist & Machine Co 8292 Morrow St Detroit 11 Mich (3)
 Di-Arco Corp 427 Eighth Ave Lake City Minn (6)
 Duff-Norton Co P O Box 1719 Charlotte NC (3-10)
 Economy Engineering Co 4511 West Lake St Chicago 24 Ill (1 thru 5)
 Eder Engineering Co 2943 1st Ave S Seattle 4 Wash (3)
 Eicor Div F L Jacobs Co 4235 W North Ave Chicago 39 Ill (1-2-5)
 Electro Lift Inc 204 Sergeant Ave Clifton NJ (3)
 Elwell-Parker Electric Co 4319 St Clair Ave Cleveland 3 Ohio (4)
 Erickson Power Lift Trucks Inc St Anthony Blvd & University Ave NE Minneapolis 18 Minn (4)
 F W D Corp 105 E 12 St Clintonville Wis (5)
 Fairbanks Co 393 Lafayette St NY 3 NY (6)
 FlexAngle Corp 3760 Oakwood Ave P O Box 2434 Youngstown 9 Ohio (8)
 Frick-Gallagher Mfg Co 110 S Michigan Ave Weirton Ohio (8)
 Gar Wood Industries Inc Wayne Mich (4)
 Goshen Churn & Ladder Inc Goshen Ind (1-2)
 Haertel (Walter) Co 2840 4th Ave So Minneapolis Minn (8)
 Hamilton Caster & Mfg Co 1519 Dixie Highway Hamilton Ohio (5-6-7-9)
 Handy Angle Div Lug-All Co 355 Lancaster Ave Haverford Pa (3-12)
 Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (3)
 Highway Trailer Industries Inc 405 E Fulton St Edgerton Wis (7-12)
 Holan Corp 4100 W 150 St Cleveland 35 Ohio (1-7)
 Hopfield Industrial Mfg Co P O Box 54 San Rafael Calif (1)
 Hyster Co 2902 N E Clackamas St Portland 8 Ore (4)
 Ideas Inc 214 Ivinson Ave Laramie Wyo (11-12)
 Ingersoll-Rand Co 11 Broadway NY 4 NY (3)
 Inland Ladder Co 1914 Stanford St Alameda Calif (1)
 International Trailer Co Inc 725 North Point Rd Baltimore 6 Md (9)
 King Mfg Corp 3152 W Chicago 22 Ill Chicago 22 Ill (3)
 Lantz Mfg Co Inc Valparaiso Ind (3)
 Leebaw Mfg Co 65 Wayne Ave Youngstown 2 Ohio (5-6)
 LeTourneau (RG) Inc 2399 S MacArthur Langview Tex (3)
 Lift Trucks Inc 2425 Spring Grove Ave Cincinnati 14 Ohio (4-6)
 Link-Belt Co 1700 Prudential Plaza Chicago 1 Ill (12)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (1)
 Magnesium Co of America 155 S E 10th Ave Hialeah Fla (2-5-6)
 Manning Maxwell & Moore Inc 250 E Main St Stratford Conn (3)
 Massey-Ferguson Industrial Div Massey-Ferguson Inc 1009 S West St Wichita 13 Kan (4)
 McCabe-Powers Body Co 5900 N Broadway St Louis 15 Mo (1-3-5-7)

Mercury Mfg Co 4700 W Division St Chicago Ill (4-6)
 Moto-Truc Co 1953 E 5th St Cleveland 3 Ohio (4)
 Nutting Truck and Caster Co 1201 W Division St Faribault Minn (6)
 Orangeville Mfg Co Orangeville Pa (6)
 Patent Scaffolding Co Inc 38-21 12th St LIC 1 NY (1-2)
 Penco Div Alan Wood Steel Co 200 Brower Ave Oaks Pa (8)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (8)
 Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif (11)
 Pucel Enterprises Inc 3746 Kelley Ave Cleveland 14 Ohio (6-8)
 Reading Body Works Inc 240 Gregg Ave Reading Pa (7)
 Reading Crane & Hoist Corp 2100 Adams St Reading Pa (3)
 Revolver Co 2000 86th St North Bergen NJ (4)
 Robbins & Myers Inc 1345 Lagonda Ave Springfield Ohio (3)
 Rol-Away Truck Mfg Co Inc 6143 S E Foster Rd Portland 6 Ore (5-6)
 Round (David) & Son Inc Box 9557 Cleveland 39 Ohio (3-12)
 ●SAFWAY STEEL PRODUCTS INC 6228 W State St Milwaukee 13 Wis (2)—ADV PG 120
 Sagen Derrick Co 3101 Grand Ave Chicago Ill (3)
 Scranton Aluminum Mfg Co 419 S Wyoming Ave Scranton Pa (1)
 Self-Lifting Piano Truck Co 423 N Main St Findlay Ohio (3-6)
 Shaw-Box Crane & Hoist Div Manning Maxwell & Moore Inc Muskegon Mich (3)
 Shure Mfg Corp 1601 S Hanley Rd St Louis Mo (8)
 Silent Hoist & Crane Co 841-63rd St Brooklyn 28 NY (3-4)
 Snap-on-Tools Corp 8028 28th Ave Kenosha Wis (11)
 South River Metal Products Co Inc 377 Turnpike South River NJ (1)
 Stevens Appliance Truck Co Norton Rd (P O Box 897) Augusta Ga (6)
 Telsta Corp 1700 Industrial Rd San Carlos Calif (2)
 Templeton Kenly & Co Gardner Rd Broadview Ill (10)
 Up-Right Inc Up-Right Scaffolds Div 1013 Pardee St Berkeley 10 Calif (1-2-3)
 Utility Body Co 1530 Wood St Oakland 7 Calif (7)
 Vanguard Mfg Co 1908 E 66th St Cleveland 3 Ohio (3-4-5)
 Vickers Inc Tulsa Products Div 731 E First St Tulsa 20 Okla (12)
 Waco Mfg Co 5250 W 130 St Cleveland 30 Ohio (2)
 Wellington Machine Co 133 De Wolf St Wellington Ohio (1)
 Werner Co (RD) Inc P O Box 580 Greenville Pa (1-2)
 Wright Hoist Div American Chain & Cable Co Inc Franklin & Hay Sts York Pa (3)
 Yale & Towne Mfg Co 11,000 Roosevelt Blvd Philadelphia 15 Pa (3 thru 6-12)
 Yeats Appliance Dolly Sales Co 2124 N 12th St Milwaukee 5 Wis (6)

12E. ARMATURE & STATOR TOOLS & EQUIPMENT

1. Air gap gauges
2. Dynamic balancers
3. Static balancers
4. Holders & stands
5. Banders
6. Brush seaters
7. Commutator grinding, cutting, scraping & filing equipment
8. Wedge levelers
9. Bushing removers
10. Brush tension scales

Allen Electric and Equipment Co 2101-2117 N Pitcher St Kalamazoo Mich (7)
 Annis (R B) Co 1101 N Delaware St Indianapolis 2 Ind (2)
 Associated American Winding Machines Inc 750 St Ann's Ave New York 56 NY (5)
 Co-operative Utilities Co Inc 4637-39 Mulberry St Phila 24 Pa (6-7)
 Crown Industrial Products Co 713 Amsterdam St Woodstock Ill (3-4)
 DeWalt Inc Fountain Ave Lancaster Pa (7)
 Foredom Electric Co Inc Bethel Conn (7)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (2)
 Gisholt Machine Co 1175 E Washington Ave Madison 10 Wis (2-3)
 Heller Tool Co 470 Main St Fitchburg Mass (7)
 Holub Industries Inc 442 Elm St Sycamore Ill (6-7)
 Hullhorst Tools Inc 227 Wamba Ave (P O Box 3344) Toledo 7 Ohio (7)
 Ideal Industries Inc 5136 Park Ave Sycamore Ill (6-7)

Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-6-7-8-9-10)
 Micro Balancing Inc 191 Herricks Rd Garden City Pk NY (2)
 Ohio Carbon Co 12508 Berea Rd Cleveland 11 Ohio (7)
 Potter & Rayfield Inc P O Box 1042 Atlanta Ga (4-5)
 Raydyne Corp 2715 S Fourth St (P O Box 1147) Springfield Ill (2)
 Simonds Saw and Steel Co 470 Main St Fitchburg Mass (7)
 Sittler Corp 18 N Ada St Chicago 7 Ill (6-7)
 Snap-On-Tools Corp 8028 28th Ave Kenosha Wis (7)
 Vibrascop Co P O Box 97 Glenford NY (2)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (6-7)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2)

12F. COIL TOOLS & EQUIPMENT

1. Checks
2. Heads
3. Impregnators
4. Lacing hooks
5. Spreaders
6. Tappers
7. Winders & tapers
8. Forms
9. Bobbins

Armature Coil Equipment Inc 2605 Vega Ave Cleveland 13 Ohio (5-7-8)
 Associated American Winding Machines Inc 750 St Ann's Ave New York 56 NY (7)
 Chapman (P E) Electrical Works Inc 1820 Chouteau Ave St Louis 3 Mo (7)
 Columbia Products Inc Wrightsville Pa (7)
 Continental Electric Co 1234 S Prairie Ave (P O Box 895) Hawthorne Calif (2)
 Crown Industrial Products Co 713 Amsterdam St Woodstock Ill (2-6-7-8-9)
 Davis Electric Co 28 Parker St Wallingford Conn (7)
 Electro Devices Inc 75 Adams St Newton Mass (7)
 Emerson Plastics Corp 1383 Seabury Ave Bronx 61 NY (8-9)
 Glastic Corp 4321 Glenridge Rd Cleveland 21 Ohio (9)
 Harder (Donald C) Co 2580 K St San Diego 2 Calif (7)
 Leeson Corp Warwick RI (7)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-6-7)
 Maryland Lava Co Box 127 Bel Air Md (8)
 Potter & Rayfield Inc P O Box 1042 Atlanta Ga (2-3-7-8)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (8-9)
 Stokes (F J) Corp 5500 Tabor Rd Philadelphia 20 Pa (3)
 Waldman (John J) Co 477 Atlantic Ave Brooklyn 17 NY (7)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (1)

12G. INSULATION TOOLS

1. Cutters
2. Edgers, folders, formers & turners
3. Wedge drivers & removers

Crown Industrial Products Co 713 Amsterdam St Woodstock Ill (2)
 Klein (Mathias) & Sons 7200 McCormick Rd Chicago 45 Ill (1)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-2-3)
 Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif (1)
 Safety Live Line Tool Co 973 86th Ave Oakland 21 Calif (1)

12H. SOLDERING TOOLS & EQUIPMENT

1. Guns, irons, pencils & machines
2. Stands & holders
3. Heaters
4. Pots
5. Torches
6. Resistance-type soldering equipment

American Electrical Heater Co 6110 Cass Ave Detroit 2 Mich (1-6)
Bernz (Otto) Co Inc 740 Driving Park Ave Rochester 13 NY (5)
Chapman (P E) Electrical Works Inc 1820 Choteau Ave St Louis 3 Mo (1)
Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn (1)
Clements Mfg Co 6650 S Narragansett Ave Chicago 38 Ill (5)
Cummins Portable Tool Div John Oster Mfg Co 5055 N Lydell Ave Milwaukee 17 Wis (1)
Dockson Corp 3839 Wabash Ave Detroit 8 Mich (5)
Electric Materials Co Box 390 North East Pa (1)
Electric Soldering Iron Co Inc West Elm St Deep River Conn (1-4)
Federal-Warco Div McKay Machine Co 1745 Overland Ave N E Warren Ohio (6)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1-4)
Good-All Electric Mfg Co 112 W First St Ogallala Neb (1)
Hexacon Electric Co 161 W Clay Ave Roselle Park NJ (1)
Ideal Industries Inc 5136 Park Ave Sycamore Ill (1-6)
Insto-Gas Corp 998 E Woodbridge St Detroit 7 Mich (1-3-5)
Kwikheat Mfg Co 3732 San Fernando Rd Glendale 4 Calif (1)
Lenk Mfg Co Franklin Ky (1-5)
Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (4)
Luma Electric Equipment Co 1607 Coining Drive Toledo 12 Ohio (1)
Lyon Rural Electric Co 2075 Moore St San Diego 12 Calif (4)
Mine Safety Appliances Co 201 N Braddock Ave Pittsburgh 8 Pa (5)
Mitchell Industries Inc Box 610 Municipal Airport Mineral Wells Tex (1)
National Lead Co 111 Broadway NY 6 NY (1)
National Specialties Co Inc 1902 Howell St Fort Wayne 7 Ind (1)
Prep Corp Edgerton Wis (5)
Raytheon Co Commercial Apparatus & Systems Div 100 River St Waltham 54 Mass (6)
Roche (Paul C) Co Inc 11 Park Pl New York 7 NY (1)
Smith Welding Equipment Div Tescom Corp 2633 4th St S E Minneapolis 14 Minn (1-5)
Snap-On-Tools Corp 8028 28th Ave Kenosha Wis (1)
Sta-Warm Electric Co 53 N Chestnut St Ravenna Ohio (4)
Triton Mfg Co Inc East Haddam Conn (1)
Turner Brass Works 821 Park Ave Sycamore Ill (4-5)
Ungar Electric Tools Electronic Div of Eldon Industries Inc 1475 E El Segundo Blvd Hawthorne Calif (1)
Vulcan Electric Co 88 Holten St Danvers Mass (1-2-3-4)
Waage Electric Inc 720 Colfax Ave Kenilworth NJ (4)
Wall (P) Mfg Co P O Box 71 Grove City Pa (1)
Weller Electric Corp 601 Stone's Crossing Rd Easton Pa (1)
Wen Products Inc 5808 Northwest Highway Chicago 31 Ill (1)
Wilder Mfg Co Inc Mechanic St & Erie Railroad Port Jervis NY (2)

12J. MISCELLANEOUS SHOP MACHINERY & EQUIPMENT

1. Arbor presses
2. Metal benders
3. Metallizers
4. Demagnetizers
5. Plating equipment
6. Etchers & engravers
7. Sprayers
8. Gear & bearing installers & extractors
9. Melting pots, tanks & kettles
10. Electric welders & accessories
11. Vacuum cleaners & portable blowers
12. Lamp disposal units
13. Magnetizers
14. Nameplate stamping machines

Acme Electric Heating Corp 99 Reading St Boston 19 Mass (9)
Acro Welder Mfg Co 1719 W St Paul Ave Milwaukee 3 Wis (10)
Acromark Co 320 Morrell St Elizabeth 4 NJ (6-14)
Aeroli Products Co Inc 69 Wesley St South Hackensack NJ (9)
American Floor Machine Co 518 S St Clair St Toledo 3 Ohio (11)
American Pipe Tool Co 4856 W Kinzie St Chicago 44 Ill (9)
American Vacuum Co 8100 N Ridgeway Skokie Ill (11)

Anderson (Albert & J M) Mfg Co 289 A St Boston 10 Mass (2)
Annis (R B) Co 1101 N Delaware St Indianapolis 2 Ind (4-6-13)
Armstrong-Bray & Co 5366 Northwest Highway Chicago 30 Ill (8)
Auto Arc-Weld Mfg Co 9615 Meech Ave Cleveland 5 Ohio (10)
Binks Mfg Co 3114 Carroll Ave Chicago 12 Ill (7)
Birdsell Products 350 N Halstead Pasadena Calif (10)
Black & Decker Mfg Co Towson 4 Md (9-11)
Blackhawk Industrial Products Co Butler Wis (8)
Breuer Electric Mfg Co 5100 N Ravenswood Ave Chicago 40 Ill (11)
Burgess Vibrocrafters Inc Grayslake Ill (6-7)
Chadsey Corp P D Box 1858 Hartford 1 Conn (12)
Clements Mfg Co 6650 S Narragansett Ave Chicago 38 Ill (11)
Cool-Amp Co 8603 W 17 Ave Portland 19 Ore (5)
Cooper (D C) Co 1467 S Michigan Ave Chicago 5 Ill (9)
Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa (9)
Coppus Engineering Corp 344 Park Ave Worcester 10 Mass (11)
Crosier Machine Tool Co 684 N Prairie Ave Hawthorne Calif (8)
Dake Corp 724 Robbins Rd Grand Haven Mich (1)
DeVilbiss Co 300 Phillips Ave Toledo 1 Ohio (7)
Di-Acro Corp 427 Eighth Ave Lake City Minn (2)
Dickey-Grabler Co 10302 Madison Ave Cleveland 2 Ohio (6)
Doyle Vacuum Cleaner Co 234 Stevens St S W Grand Rapids Mich (11)
Easco Products Inc P O Box 587 Ypsilanti Mich (4-6-13)
Eisler Engineering Co Inc 750 E 13 St Newark 3 NJ (10)
Electric Arc Inc 152 Jelliff Ave Newark 8 NJ (10)
Electro Engineering Products Co Inc 609 W Lake St Chicago 6 Ill (7)
Electro-Graphic Graver Co P O Box 265 Toledo 1 Ohio (6)
Erie Tool Works 12th & Liberty Sts Erie Pa (9)
Ewald Instruments Box 124P Kent Conn (10)
Federal-Warco Div McKay Machine Co 1745 Overland Ave N E Warren Ohio (10)
General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (9)
General Floorcraft Inc 3630 Rombouts Ave Bronx 66 NY (11)
Graham Mfg Co 152 Second Ave Needham Hts 94 Mass (10)
Guyan Machinery Co Inc Box 150 Logan W Va (10)
Harnischfeger Corp 4400 W National Ave Milwaukee 46 Wis (10)
Hesse Products Co 3800 N Virginia St Reno Nev (5)
Hobart Bros Hobart Square Troy 1 Ohio (10)
Hold-Heat Products Corp 905 W Belmont Ave Chicago 14 Ill (9)
Holub Industries Inc 442 Elm St Sycamore Ill (11)
Hossfeld Mfg Co 460 W Third St Winona Minn (2)
Hughes Aircraft Co Vacuum Tube Products Div 2020 Short St Oceanside Calif (10)
Ideal Industries Inc 5136 Park Ave Sycamore Ill (4-6-11)
Insto-Gas Corp 998 E Woodbridge St Detroit 7 Mich (9)
Invincible Vacuum Cleaner Mfg Co Dover Ohio (11)
Kent Co Inc 359 Canal St Rome NY (11)
Klein (Leo) Electronics 8526 Washington Blvd Culvert City Calif (4-13)
Laduby Co Inc Boston Post Rd (P O Box 88) Branford Conn (12)
Lenco Inc 350 W Adams St Jackson Mo (10)
Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (10)
Luma Electric Equipment Co 1607 Coining Drive Toledo 12 Ohio (4-6)
Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-4-6-8-11)
Mico Instrument Co 80 Trowbridge St Cambridge 38 Mass (6)
Mid-States Welder Mfg Co 6025 S Ashland Ave Chicago 36 Ill (10)
Miller Electric Mfg Co 718 S Bounds St Appleton Wis (10)
Morrow Co 400 W Madison St Chicago 6 Ill (11)
National Electric Welding Machines Co 1846-1916 N Trumbull St Bay City Mich (10)
National Super Service Co 1946 N 13 St Toledo Ohio (11)
New England Carbide Tool Co Inc 55 Commercial St Medford 55 Mass (2)
Newage Industries Inc 709 Greenwood Ave Jenkintown 41 Pa (6)
Niemi (Frank) Metal Products Inc Gurnee Ill (10)
Owatonna Tool Co 147 N Cedar St Owatonna Minn (1-8)
Pedrick Tool & Machine Co 3640 N Lawrence St Phila 40 Pa (2)
Peer Inc 1220 Milton St Benton Harbor Mich (10)
Pines Engineering Co Inc 601 Walnut St Aurora Ill (2)

Potter & Rayfield Inc P O Box 1042 Atlanta Ga (2)
Precision Welder Mfg Co 2483 Greenleaf Ave Elk Grove Village Ill (10)
Pulman Vacuum Cleaner Corp 25 Bulck St Boston 15 Mass (11)
Radio Frequency Laboratories Inc Boonton NJ (4-13)
Ramset Fastening System Winchester-Western Div Olin Mathieson Chemical Corp 289 Winchester Ave New Haven 4 Conn (30)
●RAPID ELECTROPLATING PROCESS INC 1414 S Wabash Ave Chicago 5 Ill (5)—ADV PG 124
Raytheon Co Commercial Apparatus & Systems Div 100 River St Waltham 54 Mass (13)
Rex Welder Div Peer Inc 1200 Milton St Benton Harbor Mich (10)
Sciaky Bros Inc 4915 W 67 St Chicago 38 Ill (10)
Scientific Electric Inc 105-109 Monroe St Garfield NJ (7-10)
Seton Name Plate Co Inc 50 Fitch St New Haven 15 Conn (14)
Shrader (F W) Co 11623 S Broadway Los Angeles 61 Calif (4-13)
Snap-On-Tools Corp 8028 28th Ave Kenosha Wis (1-8)
Spencer Turbine Co 486 New Park Ave Hartford 6 Conn (11)
Sta-Warm Electric Co 53 N Chestnut St Ravenna Ohio (9)
Stokes (F J) Corp 5500 Tabor Rd Philadelphia 20 Pa (3)
Taylor-Winfield Corp 1052 Mahoning Ave N W Warren Ohio (10)
Trent Inc 201-299 Leverington Ave Phila 27 Pa (9)
Trindl Products Ltd 1807-11 S Clark St Chicago 16 Ill (10)
Trusco Masonry Drilling Div Wheel Truening Tool Co 3200-3220 W Davison Ave Detroit 38 Mich (11)
Turner Brass Works 821 Park Ave Sycamore Ill (9)
Universal Welder Corp 3537 Lee Rd Cleveland 20 Ohio (10)
Versabar Corp 14 Whyte St Jersey City NJ (10)
Vickers Inc Electric Products Div 1847 Locust St St Louis 3 Mo (10)
Vulcan Electric Co 88 Holten St Danvers Mass (9)
Waage Electric Inc 720 Colfax Ave Kenilworth NJ (9)
Walco Electric Co 303 Allens Ave Providence 1 RI (8)
Weldution Corp 19400 W Eight Mile Rd P O Box 146 Southfield Mich (10)
Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (10-11)

12K. FASTENING DEVICES

1. Bolt-sealing & screw-anchoring compound
2. Expansion bolts, shields & anchors
3. Concrete inserts
4. Toggle bolts
5. Powder-actuated fastening tools
6. Hammer-actuated fastening tools
7. Equipment seals and sealing devices
8. Threaded inserts

APM-Hexseal Corp 41 Honeck St Englewood NJ (7)
●ACKERMAN-JOHNSON CO 625 W Jackson Blvd Chicago 6 Ill (2-3-4)—ADV PG 94
American Sealants Co 705 N Mountain Rd Hartford 11 Conn (1)
Ammo Products 909 Franklin St N E Washington DC (5-5-6-8)
Apex Bolt Products Co 452-458 N Claremont Ave Chicago 12 Ill (2-4)
Arro Expansion Bolt Co P O Box 388 Marion Ohio (2-4)
Bergen Laboratories Inc 60 Spruce St Paterson 1 NJ (8)
Blackhawk Industries 250 S Main St Dubuque Iowa (2)
Chicago Expansion Bolt Co 1338 W Concord Pl Chicago 22 Ill (2-3-4-5)
Cleveland Trencher Co 20100 St Clair Ave Cleveland 17 Ohio (3)
Cope (T J) Div Rome Cable Corp Third & Walnut Sts Collegeville 5 Pa (3)
●DIAMOND EXPANSION BOLT CO INC—500 North Ave Garwood NJ (2-4)—ADV PG 99
Equipment Corp of America 1537 Superior Ave Cleveland 14 Ohio (1-2-3-5-8)
Fastway Fasteners Inc 2157 E 28 St Lorain Ohio (2-6)
Gateway Engineering Co 3233 W Grand Ave Chicago 51 Ill (3)
Grinnell Co Inc 260 W Exchange St Providence 2 RI (2-3)
Hilti Inc 360 Fairfield Ave Stamford Conn (2-5-6)

Holub Industries Inc 442 Elm St Sycamore Ill (2-3-4)
 Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (2)
 International Seal & Knot Protector Co 58-02 37th Ave Woodside 77 NY (6)
 Jordan Industries Inc 3030 N W 75 St Miami 47 Fla (2-3-4)
 Leibfried (C H) Mfg Corp 95-101 Guernsey St Brooklyn 22 NY (2-3-4)
 Mastercraft Medical & Industrial Corp 94-21 150th St Jamaica 35 NY (2)
 Mine Safety Appliance Co 201 N Braddock Ave Pittsburgh 8 Pa (4-5)
 Molly Corp 230 N Fifth St Reading Pa (2)
 Multi-A-Frame Corp 6401 Epworth Blvd Detroit 10 Mich (3)
 National Lead Co 111 Broadway NY 6 NY (2)
 Nelson Distributor Products Div Gregory Industries Inc Toledo Ave & East 28 St Lorain Ohio (2-4-5-6)
 Omark Industries Inc 9701 S E McLoughlin Blvd Portland 22 Ore (5-6)
 ●PAINE CO 6 Westgate Rd Addison Ill (2-4)—ADV PG 122
 ●PHILLIPS DRILL CO U S 12—Michigan City Ind (2)—ADV PG 124
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (3)
 Precision Machine Products 768 Atlantic Ave Alameda Calif (2)
 Ramset Fastening System Winchester-Western Div Olin Mathieson Chemical Corp 289 Winchester Ave New Haven 4 Conn (4-5)
 Rawplug Co Inc 212 Petersville Rd New Rochelle NY (2-4)
 Remington Arms Co Inc 939 Barnum Ave Bridgeport 2 Conn (2-4-5-6)
 Schoenberger (August) Inc P O Box 23 Brooklyn 37 NY (3)
 Security Insert Co 1300 Arch St Phila 7 Pa (3)
 Southco Div South Chester Corp Lester Pa (2)
 Star Expansion Mountaineer NY (2-3-4)
 Steel City Electric Co 1207 Columbus Ave Pittsburgh 33 Pa (3)
 U S Expansion Bolt Co State St & PRR York Pa (2-4-6)
 Velocity Power Tool Co 201 N Braddock Ave Pittsburgh 8 Pa (5)
 Wahlund (M Paul) Mechanical Laboratory P O Box 16 Grant Iowa (3)
 Wej-it Expansion Products Inc 184 Bedford St Stamford Conn (2-3-4)

12L. MISCELLANEOUS ELECTRICIANS' TOOLS

1. Hammers, pliers, screwdrivers, scissors, etc.
2. Tool pouches & holders
3. Fuse pullers
4. Lamp changers, incandescent
5. Lamp changers, fluorescent
6. Test leads & clips
7. Contact burnishers
8. Wrenches, torque & impact
9. Broken lamp base removers

Adre Co 1005 S 26 St Milwaukee 4 Wis (7)
 Aircraft Specialties Inc 415 Howard St Lapeer Mich (1)
 Armstrong Bros Tool Co 5200 W Armstrong Ave Chicago 46 Ill (8)
 Benjamin Div Thomas Industries Inc 207 E Broadway Louisville 2 Ky (4)
 Billings & Spencer Co 1 Laurel St Hartford 1 Conn (1)
 Black & Decker Mfg Co Towson 4 Md (8)
 Blackhawk Industries 250 S Main St Dubuque Iowa (1)
 Bodendieck Tool Co P O Box 499 Taylorville Ill (3)
 Bonney Forge & Tool Works 2400 Rockhill Rd (North) Alliance Ohio (1)
 Bridgeport Hardware Mfg Corp Schofield Ave Bridgeport 5 Conn (1)
 Capewell Mfg Co 60-70 Governor St Hartford 2 Conn (1)
 Chadsey Corp P O Box 1858 Hartford 1 Conn (4-5)
 Champion DeArment Tool Co South Main St Meadville Pa (1-2)
 Chance (A B) Co 210 North Allen St Centralia Mo (3)
 Chicago Pneumatic Tool Co 6 E 44 St NY 17 NY (8)
 Commercial Enclosed Fuse Co of NJ 6812 Polk St Guttenberg NJ (3)
 Crescent Tool Co 200 Harrison St Jamestown NY (1)
 Dante Electric Mfg Co Bantam Conn (3)
 Diamond Tool and Horseshoe Co 4702 Grand Ave Duluth 7 Minn (1)
 Dreier Brothers Inc 7301 Woodlawn Ave Chicago 19 Ill (1)
 Duro Metal Products Co Kildare & Schubert Sts Chicago Ill (1)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (3)
 Eastern Specialty Co 3617 N 8th St Phila 40 Pa (6)

Equipment Corp of America 1537 Superior Ave Cleveland 14 Ohio (8)
 Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (6-9)
 Forsberg Mfg Co 125 Seaview Ave Bridgeport 1 Conn (1)
 General Hardware Mfg Co Inc 80 White St NY 13 NY (1)
 General Scientific Equipment Co Limekiln Pike & Williams Ave Philadelphia 50 Pa (2)
 Heller Tool Co 470 Main St Fitchburg Mass (1)
 Holub Industries Inc 442 Elm St Sycamore Ill (3)
 Hunter Tools 9851 Alburist St Santa Fe Springs Calif (1-2)
 Ideal Industries Inc 5136 Park Ave Sycamore Ill (1-3)
 Industrial Devices Inc Edgewater 19 NJ (6)
 Irwin Auger Bit Co 92 Grant St Wilmington Ohio (1)
 Kearney (James R) Corp 4236 Clayton Ave St Louis 10 Mo (3)
 Kedman Co 233 S Fifth West St Salt Lake City Utah (1)
 Kett Tool Co 5055 Madison Rd Cincinnati 27 Ohio (1)
 Klein (Mathias) & Sons 7200 McCormick Rd Chicago 45 Ill (1-2)
 Krauter & Co Inc 585 18th Ave Newark 3 NJ (1)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (1)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-3-6)
 McGill Mfg Co Inc Valparaiso Ind (4)
 Mephisto Tool Co Inc Box 16 Hudson NY (1)
 Meteor Mfg Corp Emporium Pa (1)
 Miller Equipment Co Inc 13th & New Streets Franklin Pa (1-2)
 Millers Falls Co 57 Wells St Greenfield Mass (1)
 Milwaukee Electric Tool Corp 5368 W State St Milwaukee 8 Wis (1)
 Mueller Electric Co 1555 E 31 St Cleveland 14 Ohio (6)
 National Electro Dynamics Corp 4917 St Elmo Ave Bethesda 14 Md (1)
 Owatonna Tool Co 147 N Cedar St Owatonna Minn (1-8)
 Oxwall Tool Co Ltd 928 Broadway New York 10 NY (1)
 P & C Tool Co Box 5926 Milwaukee PO Portland 22 Ore (1)
 Producers and Distributors Inc 1321 Hanover Ave Allentown Pa (1)
 Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif (1-2)
 Remington Arms Co Inc 939 Barnum Ave Bridgeport 2 Conn (8)
 Rite-O-Lite Co 308 E Washington Blvd Los Angeles Calif (4)
 Seeger-Williams Inc 4 Norman St Bridgeport 5 Conn (3)
 Shallcross Controls Inc 2217-21 N 31 St Milwaukee 8 Wis (1)
 Simpson Electric Co 5200 W Kinzie St Chicago 44 Ill (6)
 Sittler Corp 18 N Ada St Chicago 7 Ill (6)
 Skill Corp 5033 Elston Ave Chicago 30 Ill (1)
 Slaughter Co College & Young Sts Piqua 5 Ohio (6)
 Snap-on-Tools Corp 8028 28th Ave Kenosha Wis (1-8)
 Tec Imports Inc 15001-03 Califa St Van Nuys Calif (1)
 Thor Power Tool Co 175 N State St Aurora Ill (8)
 Tilden Tool Mfg Co 209 Los Molinos San Clemente Calif (3)
 Truco Masonry Drilling Div Wheel Trueing Tool Co 3200-3220 W Davison Ave Detroit 38 Mich (1-2-3)
 Union Equipment Sales Corp 1539 Superior Ave Cleveland 14 Ohio (3)
 United States Electrical Tool Co 3640 Llewellyn St Cincinnati Ohio (1)
 Trico Fuse Mfg Co 2948 N 5th St Milwaukee 12 Wis (3-6)
 Utica Div Kelsey-Hayes Co Utica 4 NY (1-8)
 Vaco Products Co 317 E Ontario St Chicago 11 Ill (1)
 Wallace & Tiernan Inc 25 Main St Belleville NJ (4)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (7)
 Wilde Tool Co Inc Hiawatha Kan (1)
 Williams (J H) & Co 400 Vulcan St Buffalo 7 NY (1)
 Wiss (J) & Sons Co 33 Littleton Ave Newark 7 NJ (1)
 Xcelite Inc Thorne Ave at Bank St Orchard Park NY (1)

12M. CUTTING & DRILLING TOOLS

1. Portable electric drills & saws
2. Hand drilling & boring tools
3. Masonry drills
4. Circle cutters
5. Hole saws
6. Metal cutters & shears
7. Star drills
8. Plaster groovers & cutters
9. Hammers, power driven

Airserco Mfg Co 3785 Bigelow Blvd Pittsburgh 13 Pa (6)
 Albertson & Co Inc 2999 Floyd Blvd Sioux City Iowa (1-2)
 American Saw & Mfg Co 67 Boylston St Springfield 1 Mass (5)
 Amma Products 909 Franklin St N E Washington DC (2-3)
 Arco Mfg Co 1701 13th Ave North (Box 817) Grand Forks ND (1)
 ●ARRO EXPANSION BOLT CO P O Box 388 Marion Ohio (2-3-7)—ADV PG 126
 Beverly Shear Mfg Corp 3023 W 111 St Chicago 55 Ill (6)
 Billings & Spencer Co 1 Laurel St Hartford 1 Conn (6)
 Black & Decker Mfg Co Towson 4 Md (1-5-6-7-9)
 Capewell Mfg Co 60-70 Governor St Hartford 2 Conn (4)
 Chicago Expansion Bolt Co 1338 W Concord Pl Chicago 22 Ill (3-7)
 Chicago Pneumatic Tool Co 6 E 44 St NY 17 NY (1-3-7-9)
 Clipper Mfg Co 2800 Warwick Kansas City 8 Mo (1 thru 5)
 Cummins Portable Tool Div John Oster Mfg Co 5055 N Lydell Ave Milwaukee 17 Wis (1)
 DeWalt Inc Fountain Ave Lancaster Pa (1-6)
 Di-Acro Corp 427 Eighth Ave Lake City Minn (6)
 Diamond Expansion Bolt Co Inc 500 North Ave Garwood NJ (2-3-7)
 Easco Products Inc P O Box 587 Ypsilanti Mich (6)
 Electric Materials Co Box 390 North East Pa (7)
 Electro Engineering Products Co Inc 609 W Lake St Chicago 6 Ill (1)
 Equipment Corp of America 1537 Superior Ave Cleveland 14 Ohio (2-3)
 Erwood Inc 1770 Berceau Ave Chicago 13 Ill (4)
 Gaston Power Tools 999 Ridge Rd Thornton Ill (1)
 General Hardware Mfg Co Inc 80 White St NY 13 NY (2-3-4)
 Greenlee Tool Co 2136 Twelfth St Rockford Ill (1-2)
 Haft & Sons Inc 950 Kent Ave Brooklyn 5 NY (3)
 Hayden Twist Drill Sales Co 25205 Ryan Rd Warren Mich (2-3)
 Heller Tool Co 470 Main St Fitchburg Mass (5)
 Holub Industries Inc 442 Elm St Sycamore Ill (3-7)
 Hykon Mfg Co 163 E State St (P O Box 923 EP) Alliance Ohio (6)
 Ingersoll-Rand Co 11 Broadway New York 4 NY (1-9)
 Interstate Drop Forge Co Special Products Div 4051 N 27th St Milwaukee 16 Wis (6)
 Irwin Auger Bit Co 92 Grant St Wilmington Ohio (1)
 Jordan Industries Inc 3030 N W 75 St Miami 47 Fla (2-3)
 Kawnner Co Niles Mich (4)
 Kett Tool Co 5055 Madison Rd Cincinnati 27 Ohio (2)
 Kor-It Co Inc 991 Richard Ave Santa Clara Calif (3)
 Krauter & Co Inc 585 18th Ave Newark 3 NJ (7)
 Lidsen of North Carolina Inc 1000 First St Hayesville NC (6)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (6)
 Madison Equipment Co 5405 Detroit Ave Cleveland 2 Ohio (5)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1)
 Mephisto Tool Co Inc Box 16 Hudson NY (2)
 Mico Instrument Co 80 Trowbridge St Cambridge 38 Mass (2-4)
 Millers Falls Co 57 Wells St Greenfield Mass (1-3-5-7)
 Milwaukee Electric Tool Corp 5368 W State St Milwaukee 8 Wis (1)
 ●MISNER MFG CO INC 202-208 Walton St Syracuse 2 NY (5)—ADV PG 125
 New England Carbide Tool Co Inc 55 Commercial St Medford 55 Mass (3)
 Newage Industries Inc 709 Greenwood Ave Jenkintown 41 Pa (1-2-7)
 ●PAINE CO 6 Westgate Rd Addison Ill (2-7)—ADV PG 122
 Pennsylvania Drilling Co Masonry Drill Div 1215 Chartiers Ave Pittsburgh 20 Pa (2-3)
 Phillips Drill Co US 12 Michigan City Ind (3)
 Porter-Cable Machine Co 700 Marcellus St Syracuse 4 NY (1-9)
 Portamag Inc 1521 E Nine Mile Detroit 20 Mich (3)
 Producers and Distributors Inc 1321 Hanover Ave Allentown Pa (1)
 Proto Tool Co 2209 S Santa Fe Ave Los Angeles 54 Calif (3-6-7)
 RCS Tool Corp 227 E Front St (P O Box 661) Bloomington Ill (1)
 Rawplug Co Inc 212 Petersville Rd New Rochelle NY (2-3-7)
 Reiton Corp 99 N Lotus Ave (P O Box 5546) Pasadena Calif (3)
 Remington Arms Co Inc 939 Barnum Ave Bridgeport 2 Conn (1)
 Robertson & Ruth 460 W Lake St Elmhurst Ill (6)
 Rotary Concrete Drill Co 650 S Arroyo Parkway Pasadena 1 Calif (2)
 Shallcross Controls Inc 2217-21 N 31 St Milwaukee 8 Wis (1-2-4)

Skill Corp 5033 Elston Ave Chicago 30 Ill (1-2-4)
 Snap-on-Tools Corp 8028 28th Ave Kenosha Wis (1-2-4-5-6)
 ● **STANLEY POWER TOOLS DIV Stanley Works New Britain Conn (1-6)—ADV PG 123**
 Star Expansion Mountaineer NY (2)
 Starrett (L S) Co Athol Mass (5)
 Super Tool Co 21650 Hoover Rd Detroit 13 Mich (2)
 Syntrol Corp 690 Lexington Ave Homer City Pa (9)
 Tec Imports Inc 15001-03 Califa St Van Nuys Calif (2-4)
 Teista Corp 1700 Industrial Rd San Carlos Calif (1)
 Thompson (Henry G) & Son Co 277 Chapel St New Haven 5 Conn (5)
 Thor Power Tool Co 175 N State St Aurora Ill (1-5-6-7-9)
 Tilden Tool Mfg Co Inc 209 Los Molinos San Clemente Calif (3)
 ● **TRUCO MASONRY DRILLING DIV WHEEL TRUE-TRON TOOL CO 3200-3220 W Davison Ave Detroit 38 Mich (3)—ADV PG 119**
 U S Expansion Bolt Co State St & PRR York Pa (1-2)
 Wachs (E H) Co 1525 N Dayton St Chicago 22 Ill (6)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (3-4-5)
 Weller Electric Corp 601 Stone's Crossing Rd Easton Pa (1)
 Wells Mfg Corp 250 Service Rd Three Rivers Mich (6)
 Wen Products Inc 5808 Northwest Highway Chicago 31 Ill (1)
 Whitman & Barnes Div United Drill and Tool Corp 4000 Plymouth Rd Plymouth Mich (2-3)
 Wiss (J) & Sons Co 33 Littleton Ave Newark 7 NJ (6)
 Wodack Electric Tool Corp 4627 W Huron St Chicago 44 Ill (1-2-8-9)
 Wyzenbeek & Staff Inc 223 N California Ave Chicago 12 Ill (1-4)

12N. MACHINE ACCESSORIES

1. Vibration & shock-isolating mounts
2. Static neutralizers & eliminators
3. Oilers
4. Nameplates, decals & adhesive labels
5. Display turntables
6. Motor & generator mountings & brackets

Acme Steel Co 135th St & Perry Ave Chicago 27 Ill (6)
 Acromark Co 320 Morrell St Elizabeth 4 NJ (4)
 Atlantic Engravers Inc 52 Ocean Ave Amityville NY (4)
 Barry Controls Div of Barry Wright Corp 700 Pleasant St Watertown 72 Mass (1)
 Brady (W H) Co 727 W Glendale Ave Milwaukee 9 Wis (4)
 Chicago Decal Co 3310 Elston Ave Chicago 18 Ill (4)
 Dickey-Grabler Co 10302 Madison Ave Cleveland 2 Ohio (4)
 Doyle (J E) Co 1220 W 6th St Cleveland 13 Ohio (2)
 Ericson Mfg Co 1660 Hayden Ave Cleveland 12 Ohio (2)
 Eymon-Dakin Co 9125 Telegraph Rd Detroit 39 Mich (3)
 Forest Electric Co 1001 N 25 Ave Melrose Park Ill (2)
 Industrial Engravers Inc 130-25 180th St Springfield Gardens 34 NY (4)
 Keyes-Davis Co 89 14th St Battle Creek Mich (4)
 Korlund Co Cantiague Rd Westbury NY (1)
 Labelon Corp Canandaigua NY (4)
 Lemmerman Walstedt Co 519 Lincoln Ave N E St Cloud Minn (6)
 National Decalcomania Corp 56 & Chestnut Sts Phila 39 Pa (4)
 North Shore Nameplate Div Anodyne Inc 1270 N W 165 St North Miami Beach Fla (4)
 Nye Tool Co 4120-30 Fullerton Ave Chicago 32 Ill (3)
 Park Nameplate Co Inc 34-10 Linden Place Flushing NY (4)
 Seton Name Plate Co Inc 50 Fitch St New Haven 15 Conn (4)
 Spencer Industries 1508 N Mascher St Phila 22 Pa (4)
 Sticht (Herman H) Co Inc 27 Park Pl New York 7 NY (2)
 TopRight Corp 160 E 9th Ave York Pa (4)
 United States Petroleum Co 104 Lakeview Ave Clifton NJ (3)
 United States Radiator Corp Hanover Ave Morris-town NJ (2-4)
 Westline E-Z-Code Div Western Lithograph Co 600 E Second St Los Angeles 54 Calif (4)

12P. MOTOR & GENERATOR REPLACEMENT PARTS

1. Armatures
2. Bases
3. Bearings & bushings
4. Brushes
5. Brush holders
6. Capacitors, motor-starting & running
7. Commutators, commutator bars & rings
8. Fields & windings
9. Flexible shafts
10. Frames
11. Shims
12. Terminal boxes
13. Slip rings & assemblies

Ahlberg Bearing Co 3025 W 47 St Chicago 32 Ill (3)
 Allegheny Plastics Inc Rt 51 & Thorn Run Rd Coraopolis Pa (3)
 American Pulley Co 4200 Wissahickon Ave Phila 29 Pa (2)
 Amplex Div Chrysler Corp P O Box 2718 Detroit 31 Mich (3-7)
 Auburn Mfg Co Pease Ave & Stack St Middletown Conn (11)
 Becker Bros Carbon Co 3450 S Laramie Ave Cicero 50 Ill (4)
 Benson (Alexander R) Co Inc 2 Davis Rd New Hartford N Y (6)
 Bound Brook Bearing Corp of America Bound Brook N J (3)
 Bronze Bearings Inc 340 N Ave East Cranford NJ (3)
 Bunting Brass and Bronze Co 715 Spencer St Toledo 1 Ohio (3)
 Carbon Engineering Corp P O Box 256 Slinger Wis (4)
 Carbone Corp 400 Myrtle Ave Boonton NJ (3-4)
 Chapin (Chas E) Co Inc 227 Fulton St New York 7 NY (4)
 Chase Brass & Copper Co Chase Metals Service Div 236 Grand St Waterbury 20 Conn (3)
 Chicago Commutator Inc Wheeling Rd & Exchange St Wheeling Ill (7)
 Chicago Die Casting Mfg Co 2510-14 W Monroe St Chicago 12 Ill (3)
 Co-operative Utilities Co Inc 4637-39 Mulberry St Phila 24 Pa (5)
 Cornell-Dubilier Electronics Div of Federal Pacific Electric Co 50 Paris St Newark 1 NJ (6)
 Dayton Precision Mfg Co 213 N Beckel St Dayton 3 Ohio (7)
 Electric Materials Co Box 390 North East Pa (7)
 Emerson Plastics Corporation 1383 Seabury Ave Bronx 61 N Y (11)
 Engelhard Industries Inc 113 Astor St Newark 14 NJ (4-13)
 Fast (John E) & Co 3580 N Elston Ave Chicago 18 Ill (6)
 Flower (D B) Mfg Co 1217 Spring Garden St Philadelphia 23 Pa (5)
 General Electric Co Industrial Sales Operation 1 River Road Schenectady 5 NY (1 thru 13)
 Girard-Hopkins 1000 40th Ave Oakland 1 Calif (6)
 Green Ball Bearing Co 9518 Cassius Ave Cleveland 5 Ohio (3)
 Gwilliam Co 348 Furman St Brooklyn 1 NY (3)
 Han-Kor Inc 9520 Richmond Ave Cleveland 5 Ohio (7)
 Helwig Carbon Products Inc 2550 N 30 St Milwaukee 10 Wis (4)
 Hyatt Bearings Div General Motors Corp Harrison NJ (3)
 Illinois Condenser Co 1616 N Throop St Chicago 22 Ill (6)
 Industrial Electric Reels Inc 1509 Chicago St Omaha 2 Neb (5-13)
 Johnson Bronze Co 500 S Mill St New Castle Pa (3)
 Keystone Carbon Co Inc 1935 State St St Marys Pa (3-4)
 Kirkwood Carbon Corp 4857 W 130 St Cleveland 35 Ohio (4)
 Kirkwood Commutator Corp 4855 W 130 St Cleveland 35 Ohio (7-13)
 Kolton Electric Mfg Co 123 New Jersey Railroad Ave Newark 5 NJ (12)
 Leibfried (C H) Mfg Corp 95-101 Guernsey St Brooklyn 22 NY (10-11)
 Marine Electric Co 195 Fremont San Francisco Calif (4)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (9)
 Murray Equipment Co Inc 14011 Oakland Ave Detroit 3 Mich (2)
 National Electric Coll Div McGraw-Edison Co 800 King Ave Columbus 16 Ohio (8)
 New Hampshire Ball Bearings Inc Route 202 Peterborough N H (3)
 Ohio Carbon Co 12508 Berea Rd Cleveland 11 Ohio (4)
 Overly-Hautz Co 11500 Madison Ave Cleveland 2 Ohio (2)
 Power-Strut Div Van Huffel Tube Corp Dietz Rd Warren Ohio (2-10)
 Pure Carbon Co Inc 441 Hall Ave St Marys Pa (4)
 Pyramid Electric Co 1445 Hudson Blvd North Bergen NJ (6)
 Randall Graphite Bearings Inc Greenlawn & Lake Sts Lima Ohio (3)
 Remington Arms Co Inc 939 Barnum Ave Bridgeport 2 Conn (9)

Ringsdorff Carbon Corp Box 22 East McKeesport Pa (4-5)
 Rollway Bearing Co Inc 541 Seymour St Syracuse 4 N Y (3)
 Russell & Stoll Co Inc 125 Barclay St NY 7 NY (1)
 SKF Industries Inc Front St & Erie Ave Phila 32 Pa (3)
 St Marys Carbon Co State St St Marys Pa (3-4)
 Safe-T-Mike Corp 2904 Chapman Oakland 1 Calif (6)
 Seager Standard Carbon Co 291 Church St New York 13 NY (4)
 Shenango Furnace Co Centrifugal Casting Div West Third St Dover Ohio (3-13)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (11)
 Southern Carbon Brush Co Inc 7 18th St SW (P O Box 1710) Birmingham 1 Ala (4)
 Southern Electrical Equipment Co 308 W Bland at Mint St Charlotte 3 NC (13)
 Sprague Electric Co North Adams Mass (6)
 Stackpole Carbon Co Stackpole St St Marys Pa (3-4)
 Stimple & Ward Co P O Box 1102 Pittsburgh 37 Pa (8)
 Stow Mfg Co 162 Shear St Binghamton NY (9)
 Superior Carbon Products Co 9115 George Ave Cleveland 5 Ohio (4-5-13)
 Swiss Jewel Co 225 Lafayette Bldg Phila 6 Pa (3)
 Toledo Commutator Co 1101 S Chestnut St Owosso Mich (7-13)
 Torrington Co 59 Field St Torrington Conn (3)
 United States Graphite Co Saginaw Mich (3-4)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (4-5)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (1-3 thru 10-12-13)
 Wilmington Fibre Specialty Co New Castle Del (11)

12Q. SHEETS, RODS & TUBES

1. Asbestos
2. Cambric
3. Fiber, glass fiber & fiberboard
4. Paper composition
5. Mica
6. Polyester film
7. Pressboard (Fullerboard)
8. Plastic
9. Silicone
10. Varnished silk

Allegheny Plastics Inc Rt 51 & Thorn Run Rd Coraopolis Pa (8)
 Anchor Packing Co 401 N Broad St Philadelphia 8 Pa (1)
 Asheville-Schoonmaker Mica Co 900 Jefferson Ave Newport News Va (5)
 Auburn Mfg Co Pease Ave & Stock St Middletown Conn (1 thru 9)
 Bios Laboratories Inc 17 W 60 St New York 23 NY (5-6-8-9)
 Brand Dielectrics 902 Main St Williamamit Conn (1-2-3-4)
 Chase & Sons Inc 19 Highland Ave Randolph Mass (6-8-9)
 Connecticut Hard Rubber Co 407 East St New Haven 9 Conn (9)
 Continental-Diamond Fibre Newark Del (1-3-4)
 Cottrell Paper Co Inc 10 Purchase St Fall River Mass (6)
 Electro-Technical Products Div Sun Chemical Corp 113 E Centre St Nutley 10 NJ (1-2-3-4-6-9-10)
 Emerson Plastics Corp 1383 Seabury Ave Bronx 61 NY (8)
 General Electric Co Chemical & Metallurgical Div Silicone Products Dept Waterford NY (9)
 General Electric Co Insulating Materials Sec Chemical Materials Dept 24 River Rd Schenectady 5 NY (2-4)
 Glastic Corp 4321 Glenridge Rd Cleveland 21 Ohio (3-6-8-9)
 Hysol Corp 1100 Seneca Ave Olean NY (8)
 Illumitron Engineering Corp 680 E Taylor Ave Sunnyvale Calif (8)
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill (4)
 Johns-Manville 22 E 40 St New York 16 NY (1-3)
 Keasbey & Mattison Co Butler Ave Ambler Pa (1)
 Mica Fabricating Co 53 Central Ave Rochelle Park NJ (4-5)
 Micacraft Products Inc 701-03 McCarter Highway Newark 5 NJ (5)
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn (1-2-3-4-6-8-9-10)
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (1-2-4)
 Mycalex Corp of America 125 Clifton Blvd Clifton NJ (5)
 National Electric Coil Div McGraw-Edison Co 800 King Ave Columbus 16 Ohio (1-2-3-4-5-6-7-8-9)

Natvar Corp 211 Randolph Ave Woodbridge NJ (2-4-8-10)
 Panelyte Div St Regis Paper Co Enterprise Ave Trenton NJ (8)
 Penn Fibre & Specialty Co Inc 2024 E Westmoreland St Philadelphia 34 Pa (3-4-7-8)
 Plymouth Rubber Co Inc 23 Revere St Canton Mass (8)
 Polyken Sales Div Kendall Co 309 W Jackson Blvd Chicago 6 Ill (8)
 Polymer Corp 2120 Fairmont Ave Reading Pa (8)
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ (1)
 Red Seal Electric Co 10307 Detroit Ave Cleveland 2 Ohio (3-8)
 Ruberoid Co 733 Third Ave New York 17 NY (1)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (3-8-9)
 Spaulding Fibre Co Inc 310 Wheeler St Tonawanda NY (3-4-7-8)
 Standard Asbestos Mfg Co 860 W Evergreen Ave Chicago 22 Ill (1)
 Stone Paper Tube Co 900 Franklin St N E Washington 17 DC (8)
 Sylvania Electric Products Inc 730 Third Ave New York 19 NY (5)
 Taylor Fibre Co Norristown Pa (3-8-9)
 Wilmington Fibre Specialty Co New Castle Del (3-4-8)

12R. TAPE—PRESSURE-SENSITIVE (ADHESIVE)

1. Cellophane
2. Electrical
3. Friction
4. Masking
5. Rubber
6. Varnished cambric
7. Plastic
8. Color-coding
9. Corrosion-preventive

Accurate Mfg Co 6 Hepworth Place Garfield NJ (2-3-5-7)
 American Biltrite Rubber Co Boston Woven Hose & Rubber Div 29 Hampshire St Cambridge Mass (2-3-5-7)
 Anchor Packing Co 401 N Broad St Philadelphia 8 Pa (2-3)
 Appleton Rubber Co Inc 57 Cornwall St Boston 30 Mass (3-5-7)
 Arno Adhesive Tapes Inc 5183 Ohio St Michigan City Ind (2-4-7-8-9)
 Behr-Manning Co Troy NY (1-2-4-7)
 ●BISHOP MFG CORP 10 Canfield Rd Cedar Grove NJ (2-5-7)—ADV PG 120
 Brand Dielectrics 902 Main St Willimantic Conn (2)
 Chase & Sons Inc 19 Highland Ave Randolph Mass (1-2-3-5-7)
 Clifton Mfg Co Inc Mattapan Boston 26 Mass (2-3-5-7)
 Connecticut Hard Rubber Co 407 East St New Haven 9 Conn (2-8-9)
 Continental-Diamond Fibre Newark Del (2-7)
 Dayton Industrial Products Co Melrose Park Ill (2-3-5-7)
 Dunton (M W) Co 350 Kinsley Ave Providence RI (2-3)
 Electro-Technical Products Div Sun Chemical Corp 112 E Centre St Nutley 10 NJ (6-7)
 Emerson Plastics Corporation 1383 Seabury Ave Bronx 61 NY (7)
 General Electric Co Insulating Materials Sec Chemical Materials Dept 24 River Rd Schenectady 5 NY (6-7)
 ●GENERAL ELECTRIC SUPPLY CO 1260 Boston Ave Bridgeport Conn (2-3-5 thru 9)—ADV PG 84-85
 Goodall Rubber Co 445 Whitehead Rd Trenton NJ (3-5-7)
 ●GRAYBAR ELECTRIC CO INC—420 Lexington Ave NY 17 NY (2-3-4-5)—ADV PG 2
 Hampton Mfg Co Industrial Tape Div 111 Cedar St New Rochelle NY (4-7-8-9)
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill (3)
 Johns-Manville 222 E 40 St New York 16 NY (2-3-4-5-7)
 Labelon Corp Canandaigua NY (1-7-8)
 Linton (Horace) Div Hess Goldsmith & Co Inc 1400 Broadway New York 18 NY (2)
 Mica Fabricating Co 53 Central Ave Rochelle Park NJ (2)
 Minnesota Mining and Mfg Co Electrical Products Div 900 Bush Ave St Paul 6 Minn (2-5-7)
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn (2-5-6-7)
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (1 thru 7)
 Mystik Adhesive Products Inc 2635 N Kildare Ave Chicago 39 Ill (1-2-4)
 National Electric Coil Div McGraw-Edison Co 800 King Avenue Columbus 16 Ohio (2-6)
 Permacel US Highway 1 New Brunswick NJ (1-2-4-7)
 Peters Mfg Co 162 Old Colony Ave Wollaston 70 Mass (2-5)

Plymouth Rubber Co Inc 23 Revere St Canton Mass (2-3-4-5-7-8-9)
 Polyken Sales Div Kendall Co 309 W Jackson Blvd Chicago 6 Ill (2-4-7-9)
 Polymer Corp 2120 Fairmont Ave Reading Pa (2-7)
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ (5-7)
 Ruberoid Co 733 Third Ave New York 17 NY (3)
 Seton Name Plate Co Inc 50 Fitch St New Haven 15 Conn (8)
 Shuford Mills Inc P O Drawer 340 Hickory NC (2-4-7-8)
 Superior Insulation Tape Co 3100 Lambdin Ave St Louis 15 Mo (3-5-7)
 Topflight Corp 160 E 9th Ave York Pa (1-2-7-8)
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY (2-3-4-5-6-7)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (2-6-7)

12S. TAPE—WOVEN & OTHERS

1. Asbestos
2. Cellulose acetate
3. Cotton
4. Crepe paper
5. Polyester
6. Polyethylene
7. Glass fiber
8. Silicone

Anchor Packing Co 401 N Broad St Philadelphia 8 Pa (1)
 Atlas Asbestos Co 423 Walnut St North Wales Pa (1-7)
 Auburn Mfg Co Pease Ave & Stack St Middletown Conn (1-6-8)
 Behr-Manning Co Troy NY (4-7)
 ●BISHOP MFG CORP 10 Canfield Rd Cedar Grove NJ (6)—ADV PG 120
 Brand Dielectrics 902 Main St Willimantic Conn (7-8)
 Chase & Sons Inc 19 Highland Ave Randolph Mass (1-2-3-6-7-8)
 Connecticut Hard Rubber Co 407 East St New Haven 9 Conn (7-8)
 Continental-Diamond Fibre Newark Del (1-5-7-8)
 Electro-Technical Products Div Sun Chemical Corp 112 E Centre St Nutley 10 NJ (1-5-8)
 General Electric Co Insulating Materials Sec Chemical Materials Dept 24 River Rd Schenectady 5 NY (6-8)
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill (1-3)
 Johns-Manville 22 E 40 St New York 16 NY (3-4-5-7)
 Keasbey & Mattison Co Butler Ave Ambler Pa (1)
 Labelon Corp Canandaigua NY (2-5)
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn (1-3 thru 8)
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (1-2-3-4)
 National Electric Coil Div McGraw-Edison Co 800 King Avenue Columbus 16 Ohio (7-8)
 Natvar Corp 211 Randolph Ave Woodbridge NJ (7-8)
 Permacel US Highway 1 New Brunswick NJ (2-3-4-5-6-7-8)
 Peters Mfg Co 162 Old Colony Ave Wollaston 70 Mass (4-5-8)
 Polyken Sales Div Kendall Co 309 W Jackson Blvd Chicago 6 Ill (6-7-8)
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ (1)
 Topflight Corp 160 E 9th Ave York Pa (5-7)
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY (1)
 Varflex Corp 508 W Court St Rome NY (5-6-7)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (7-8)

12T. FLEXIBLE SLEEVING & TUBING

1. Cotton
2. Silicone
3. Plastic
4. Rubber
5. Fiber
6. Asbestos

Allegheny Plastics Inc Rt 51 & Thorn Run Rd Corapolis Pa (3)
 Alpha Wire Corp 200 Varick St New York 14 NY (1-2-3-4)

Atlas Asbestos Co 423 Walnut St North Wales Pa (6)
 Automatic Vulcanizers Corp 16 Hudson St New York 13 NY (4)
 Brand-Rex Div American Enka Corp 31 Sudbury Rd Concord Mass (1-2-3)
 Continental-Diamond Fibre Newark Del (2-3-5)
 Electra Insulation Corp 33-30 57th St Woodside 77 NY (5)
 Emerson Plastics Corp 1383 Seabury Ave Bronx 61 NY (3)
 Goodall Rubber Co 445 Whitehead Rd Trenton NJ (4)
 Hewitt-Robins 666 Glenbrook Rd Stamford Conn (2-4)
 Hitemp Wires Co 1200 Shames Dr Westbury NY (3)
 Illumitronic Engineering Corp 680 E Taylor Ave Sunnyvale Calif (3)
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill (1-2)
 Johns-Manville 22 E 40 St New York 16 NY (6)
 Keasbey & Mattison Co Butler Ave Ambler Pa (6)
 Kirel Inc Box 459A RFD 1 Kingston NY (2)
 Markel (L Frank) & Sons Norristown Pa (1)
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn (1 thru 5)
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (1-2-3-5)
 National Electric Coil Div McGraw-Edison Co 800 King Avenue Columbus 16 Ohio (1-2)
 Natvar Corp 211 Randolph Ave Woodbridge NJ (2-3)
 Permacel US Highway 1 New Brunswick NJ (3)
 Polymer Corp 2120 Fairmont Ave Reading Pa (3)
 Saylor Electric Products Corp 277 Pierce St Birmingham Mich (1-3-5)
 Snyder (M L) & Son Inc 1897 E York St Phila 25 Pa (3-4)
 Stone Paper Tube Co 900 Franklin St NE Washington 17 DC (3-5)
 Sulfex Corp 33-40 57th St Woodside 77 NY (1-2-3-4)
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY (3-4)
 Varflex Corp 508 W Court St Rome NY (1 thru 5)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (3-5)
 Westline E-Z-Code Div Western Lithograph Co 600 E Second St Los Angeles 54 Calif (3)
 Wilmington Fibre Specialty Co New Castle Del (5)

12U. INSULATING MATERIALS—MISCELLANEOUS

1. Beads
2. Cable wrapping
3. Cement
4. Fused quartz
5. Insulating compounds
6. Varnished canvas (duck cloth)
7. Insulating paint
8. Porcelain insulating products
9. Slate
10. Switchboard mats
11. Varnish
12. Asbestos, ebony & soapstone
13. Insulating paper & cloth
14. Motor encapsulating kits
15. Insulating putty

American Products Mfg Co Inc 8127-33 Oleander St New Orleans 18 La (3-5-15)
 Atlas Asbestos Co 423 Walnut St North Wales Pa (3)
 Automatic Vulcanizers Corp 16 Hudson St New York 13 NY (5)
 Barrett Varnish Co 1532 S 50th St Cicero 50 Ill (3-7-11)
 Behr-Manning Co Troy NY (2)
 Bios Laboratories Inc 17 W 60 St New York 23 NY (3-5-7-11)
 Bishop Mfg Corp 10 Canfield Rd Cedar Grove NJ (5)
 Blackburn (Jasper) Corp 1525 Woodson Rd St Louis 14 Mo (5)
 Boring (George C) Co Inc P O Box 115 East Rutherford NJ (3-5-7-11)
 Brand Dielectrics 902 Main St Willimantic Conn (2-6)
 Carbolite Co 32 Hanley Industrial Ct St Louis 17 Mo (7)
 Central Scientific Co 1700 Irving Pk Rd Chicago 13 Ill (3)
 Chance (A B) Co 210 N Allen St Centralia Mo (2-5-6-8)
 Connecticut Hard Rubber Co 407 East St New Haven 9 Conn (3)
 Cook's Sons (Adam) Inc 5 N Stiles St Linden NJ (5)
 Cottrell Paper Co Inc 10 Purchase St Fall River Mass (12)
 Delta Chemical Works Inc 23 W 60 St New York 23 NY (3-5-7-11)
 Dolph (John C) Co Monmouth Junction NJ (5-11)

Dow Corning Corp Midland Mich (5-11-14)
 Eagle-Picher Co American Building Cincinnati 1 Ohio (3-5)
 Electro-Technical Products Div Sun Chemical Corp 113 E Centre St Nutley 10 NJ (6)
 Engelhard Industries Inc 113 Astor St Newark 14 NJ (4)
 Epoxylite Corp 1428 N Tyler Ave South El Monte Calif (2-3-5-7-11-14)
 G & W Electric Specialty Co 3500 W 127 St Blue Island Ill (5)
 General Electric Co Chemical & Metallurgical Div Silicone Products Dept Waterford NY (5-11)
 General Electric Co Insulating Materials Sec Chemical Materials Dept 24 River Rd Schenectady 5 NY (3-5-6-7-11)
 Glastic Corp 4321 Glenridge Rd Cleveland 21 Ohio (5)
 Goodrich (B F) Chemical Co 3135 Euclid Ave Cleveland 15 Ohio (5)
 Hardman (H V) Co Inc 571 Cortlandt St Belleville 9 NJ (5)
 Hubbard & Co 6301 Butler St Pittsburgh 1 Pa (8)
 Hysol Corp 1100 Seneca Ave Olean NY (3-5-11-14)
 I-T-E Circuit Breaker Co 1900 Hamilton St Philadelphia 30 Pa (8)
 I-T-E Circuit Breaker Co Victor Insulators Div Victor NY (8)
 Illinois Edison Porcelain McGraw-Edison Co 510 N Pearl St Macomb Ill (8)
 Illumitronic Engineering Corp 680 E Taylor Ave Sunnyvale Calif (2)
 Induction Heating Corp 181 Wythe Ave Brooklyn 11 NY (5)
 Isolantite Mfg Corp Stirling NJ (1-12)
 Johns-Manville 22 E 40 St New York 16 NY (3-5-12)
 Joy Mfg Co Electrical Products Div 338 S Broadway Nw Philadelphia Ohio (5)
 Keesbey & Mattison Co Butler Ave Ambler Pa (12)
 Lapp Insulator Co Inc 35 Gilbert St Leroy NY (8)
 Lastik Paint Inc 200 S Craig St (Suite 406) Pittsburgh 13 Pa (11)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (1-3-11)
 Maryland Lava Co Box 127 Bel Air Md (12)
 Midland Industrial Div Harrison Paint & Varnish 1329 Harrison Ave SW Canton 1 Ohio (7)
 ●MINERALAC ELECTRIC CO 25 N Peoria St Chicago 7 Ill (5)—ADV PG 103
 Minnesota Mining and Mfg Co Electrical Products Div 900 Bush Ave St Paul & Minn (5)
 Minnesota Mining & Mfg Co Irvington Div 900 Bush Ave St Paul Minn (2-6-7-11)
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (5-6-7-11)
 National Electric Coil Div McGraw-Edison Co 800 King Ave Columbus 16 Ohio (6)
 Natvar Corp 211 Randolph Ave Woodbridge NJ (6)
 New Jersey Porcelain Co Inc Plum St & NY Ave (P O Box 908) Trenton 5 NJ (8)
 Ohio Brass Co 380 N Main St Mansfield Ohio (8)
 PLM Products Inc 3871 W 150 St Cleveland 11 Ohio (5)
 Permacel US Highway 1 New Brunswick NJ (5-11)
 Peters Mfg Co 162 Old Colony Ave Wollaston 70 Mass (5)
 Plymouth Rubber Co Inc 23 Revere St Canton Mass (2-5-13)
 Porcelain Products Co 224 N Patterson St Carey Ohio (8)
 Portland-Monson Slate Co 465 Congress St Portland 3 Me (9)
 Pyrosil Inc 1889 Front St Cuyahoga Falls Ohio (4)
 Quigley Co Inc 415 Madison Ave New York 17 NY (3-7)
 Raybestos-Manhattan Inc 61 Willett St Passaic NJ (10)
 Ruberoid Co 733 Third Ave New York 17 NY (3-13)
 Rusgreen Mfg Co 14262 Birwood Ave Detroit 38 Mich (5)
 Sauereisen Cements Co 1045 N Canal St Pittsburgh 15 Pa (3-5-7)
 Saxonburg Ceramics Inc P O Box 157 Saxonburg Pa (1-8)
 Schenectady Chemicals Inc Schenectady 1 NY (5-11)
 Seton Name Plate Co Inc 50 Fitch St New Haven 15 Conn (12)
 Sherwin-Williams Co 101 Prospect Ave NW Cleveland 1 Ohio (5-7-11)
 Standard Asbestos Mfg Co 860 W Evergreen Ave Chicago 22 Ill (3-13)
 Star Porcelain Co Muirhead Ave Trenton 9 NJ (1-8)
 Thermal American Fused Quartz Co Rt 202 & Change Bridge Rd Montville NJ (4)
 Union Carbide Corp Silicones Div 270 Park Ave New York 17 NY (5-11)
 United States Rubber Co 1230 Avenue of the Americas New York 20 NY (10)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (5-7-8-11)
 Wilbur & Williams Co Inc 648 Pleasant St Norwood Mass (5-7-11)
 Zippertubing Co 752 S San Pedro Los Angeles 14 Calif (2)

12V. EXPENDABLE SUPPLIES, MISCELLANEOUS

1. Armature banding
2. Banding & lacing twine
3. Beeswax
4. Cleaning compound
5. Commutator cement
6. Flux & paste
7. Impregnating compound
8. Rust & corrosion preventives
9. Slot wedges & sticks
10. Solder
11. Wire-stripping and pulling compounds
12. Wire & cable tags & markers
13. Controller contacts & fingers
14. Heat-conducting compounds
15. Solenoid & magnet coils
16. Cable sealing compound
17. Wood preservative
18. Thread lubricant
19. Brazing alloys
20. Graphite & electrodes
21. Welding wire
22. Waterproofing compound

Insulation and tape are listed individually under 12Q, R, S, T and U in this section.

Acromark Co 320 Morrell St Elizabeth 4 NJ (12)
 All-State Welding Alloys Co Inc 249-55 Ferris Ave White Plains NY (6-10-19-21)
 Allen (L B) Co Inc 5624 N Newark at Bryn Mawr Chicago 31 Ill (6-10)
 Alpha Metals Inc 60C Water St Jersey City 4 NJ (6-10)
 Alpha Wire Corp 200 Varick St New York 14 NY (2-12)
 American Products Mfg Co Inc 8127-33 Oleander St New Orleans 18 La (7)
 American Silver Co Inc Industrial Div 36-07 Prince St Flushing 54 NY (6)
 American Solder & Flux Co 19th & Willard Sts Phila 40 Pa (6-8)
 Anaconda Wire & Cable Co 25 Broadway New York 4 NY (12)
 Anchor Metal Co Inc 966 Meeker Ave Brooklyn 22 NY (6-10-19)
 Arco Mfg & Sales Corp 438 Tenth Ave New York 1 NY (8)
 Automatic Vulcanizers Corp 16 Hudson St New York 13 NY (7-8)
 Barry (William B) Co (P O Box 63) Back Bay Annex Boston 17 Mass (12)
 Becker Bros Carbon Co 3450 So Laramie Ave Cicero 50 Ill (20)
 Benson (Alexander R) Co Inc 2 Davis Rd New Hartford NY (6-10)
 Bios Laboratories Inc 17 W 60 St New York 23 NY (3-4-6-7-8-9-10)
 Brady (W H) Co 727 W Glendale Ave Milwaukee 9 Wis (12)
 Bryant Mfg Co 410 N Paulina St Chicago 22 Ill (12)
 Burndy Corp Norwalk Conn (11)
 Burnley Battery & Mfg Corp 103 Clay St (P O Box 511) North East Pa (6)
 C & S Products Co Windsor Locks Conn (16)
 Cable Electric Products Inc 234 Daboll St Providence 7 RI (6-10)
 Cannon Electric Co 3208 Humboldt St Los Angeles 31 Calif (15)
 Carboline Co 32 Hanley Industrial Ct St Louis 17 Mo (8)
 Carbolineum Wood Preserving Co 6683 N 40 St Milwaukee 9 Wis (8-17)
 Chapin (Chas E) Co Inc 227 Fulton St New York 7 NY (13)
 Chemalloy Electronics Corp Gillespie Field Santee Calif (10)
 Cook's Sons (Adam) Inc 5 N Stiles St Linden NJ (11)
 Cool-Amp Co 8603 W 17 Ave Portland 19 Ore (14)
 Crown Industrial Products Co 713 Amsterdam St Woodstock Ill (8)
 Delta Chemical Works Inc 23 W 60 St New York 23 NY (3-4-6-7-8-10)
 Division Lead Co 7742 W 61st Place Summit Ill (6-10-11)
 Dow Corning Corp Midland Mich (7-8)
 Dunton (M W) Co 350 Kinsley Ave Providence RI (6-10)
 Eagle Electric Mfg Co Inc 23-10 Bridge Plaza South Long Island City 1 NY (6)
 Early (Edward E) Co 1129 5th St N W Canton 3 Ohio (5)
 Electrical Fittings Corp 123 Smith St East Farmingdale NY (11)
 Electrical Windings Inc 2015 N Kolmar Ave Chicago 39 Ill (15)
 ●ELECTRO COMPOUND CO 4145 W 150 St (P O Box 8604) Cleveland 35 Ohio (11-18)—ADV PG 124
 Emerson Plastics Corporation 1383 Seabury Ave Bronx 61 NY (9)
 Engelhard Industries Inc 113 Astor St Newark 14 NJ (6-10-19)
 Farrelly Co 1245 N 26th St Phila 21 Pa (6-8-10)
 Federated Metals Div American Smelting & Refining Co 120 Broadway New York 5 NY (6-10)
 Fidelity Chemical Products Corp 470 Frelinghuysen Ave Newark 12 NJ (4-8-11)

General Electric Co Chemical & Metallurgical Div Silicone Products Dept Waterford NY (7)
 Glastic Corp 4321 Glenridge Rd Cleveland 21 Ohio (9)
 Hardman (H V) Co Inc 571 Cortlandt St Belleville 9 NJ (7)
 Epoxylite Corp 1428 N Tyler Ave South El Monte Calif (7-8-16)
 Hitemp Wires Co 1200 Shames Dr Westbury NY (21)
 Hysol Corp 1100 Seneca Ave Olean NY (1-7)
 ●IDEAL INDUSTRIES INC 5136 Park Ave Sycamore Ill (5-11)—ADV PG 92
 Illumitronic Engineering Corp 680 E Taylor Ave Sunnyvale Calif (2)
 Insulation Mfrs Corp 565 W Washington Blvd Chicago 6 Ill (2-9)
 Johns-Manville 22 E 40 St New York 16 NY (8-19)
 Johnson Mfg Co Inc 600 Anamosa Rd Mt Vernon Iowa (6-10)
 Johnston Foil Div Standard Packaging Corp 6106 S Broadway St Louis 11 Mo (10)
 Jordan Co 51st & Merrimac Ave Chicago 38 Ill (6)
 Kester Solder Co 4201 Wrightwood Ave Chicago 39 Illinois (6-10)
 Keyes-Davis Co 89 14th St Battle Creek Mich (12)
 Lenk Mfg Co Franklin Ky (6-10)
 Lint (Clyde W) 2323 W 18 St Chicago 8 Ill (11)
 London Chemical Co Inc 1535 N 31 Ave Melrose Park Ill (6-8-11)
 Ludlow Textile Products P O Box 101 Needham Heights 94 Mass (2)
 Lukens (Thos F) Metal Co Hedley & Bath Sts Philadelphia 37 Pa (6-10)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (4-5)
 Metal & Thermit Corp Rahway NJ (8)
 Mico Instrument Co 80 Trowbridge St Cambridge 38 Mass (6-10)
 Midland Industrial Div Harrison Paint & Varnish Co 1329 Harrison Ave S W Canton 1 Ohio (8-11)
 ●MINERALAC ELECTRIC CO 25 N Peoria St Chicago 7 Ill (11)—ADV PG 103
 Mitchell Rand Mfg Corp Insulation Div 51 Murray St New York 7 NY (1-2-5-7-9-10-16)
 Mona Industries Inc Paterson 17 NJ (4-8)
 Monitor Controller Div Atlee Corp 99 Grove St Rockland Mass (13)
 National Band & Tag Co 721 York St Newport Ky (12)
 National Electric Coil Div McGraw-Edison Co 800 King Ave Columbus 16 Ohio (1-2-7-9-10)
 National Lead Co 111 Broadway NY 6 NY (6-10)
 North Shore Nameplate Div Andonyne Inc 1270 N W 165 St North Miami Beach Fla (12)
 Northwoods Mfg Chemists Inc Porterville Wis (4)
 Ohio Carbon Co 12508 Berea Rd Cleveland 11 Ohio (20)
 Okun (A L) Co Inc 109-02 Van Wyck Expressway South Ozone Park NY (10)
 Page Steel & Wire Div American Chain & Cable Co Inc P O Box 692 Monessen Pa (1)
 Penetone Co 74 Hudson Ave Tenafly NJ (4-8)
 Penn Fibre & Specialty Co Inc 2024 E Westmoreland St Phila 34 Pa (12)
 Permacel US Highway 1 New Brunswick NJ (7)
 Plymouth Rubber Co Inc 23 Revere St Canton Mass (8-16)
 Porcelain Products Co 224 N Patterson St Carey Ohio (10)
 Premex Products Div Chisholm-Ryder Co Inc College & Highland Aves Niagara Falls NY (12)
 Rees (Mackworth G) Div Avis Industrial Corp 1573 E Forest Ave Detroit 7 Mich (21)
 Reynolds Metals Co Richmond 18 Va (21)
 River Smelting & Refining Co 4195 Bradley Rd (P O Box 5755) Cleveland 1 Ohio (10)
 Ruby Chemical Co 68-70 McDowell St (P O Box 1108) Columbus 16 Ohio (6-10)
 Rust-Oleum Corp 2425 Oakton St Evanston Ill (8)
 Sherwin-Williams Co 101 Prospect Ave N W Cleveland 1 Ohio (7)
 Silicone Insulation Inc 1383 Seabury Ave Bronx 61 NY (9)
 Sittler Corp 18 N Ada St Chicago 7 Ill (5)
 Smith Welding Equipment Div Tescom Corp 2633 4th St S E Minneapolis 14 Minn (6)
 Stackpole Carbon Co Stackpole St Mt Marys Pa (13-20)
 Subox Inc Fairmont Plant Hackensack NJ (8)
 Sulfo Inc 1143 E Jersey St Elizabeth 4 NJ (8)
 Sunshine (John) Chemical Co Inc 600 W Lake St Chicago 6 Ill (6-18)
 Superior Carbon Products Co 9115 George Ave Cleveland 5 Ohio (13)
 Thermo Mfg Co 1017 Rosine St Houston Tex (14)
 Turco Products Inc 24600 S Main St Wilmington Calif (4-8)
 Union Carbide Corp Silicones Div 270 Park Ave New York 17 NY (7-8-16)
 United Wire & Supply Corp 1497 Elmwood Ave Providence 7 RI (6-10)
 Waveland Electric Co 5542 N Ashland Ave Chicago 40 Ill (4-5-8-13-22)
 Westinghouse Electric Corp P O Box 2278 Pittsburgh 30 Pa (13-15-20)
 Westline E-Z-Code Div Western Lithograph Co 600 E Second St Los Angeles 54 Calif (12)
 Westwood Cable Corp 3440 Overland Ave Los Angeles 34 Calif (21)
 Wilbur & Williams Co Inc 648 Pleasant St Norwood Mass (8-17)

Wilmington Fibre Specialty Co New Castle Del (9)
 Zippertubing Co 13000 S Broadway Los Angeles 61 Calif (12)

Biddle Trade Publishing Co 2720 Beverly Blvd Los Angeles 57 Calif
 Henderson-Hazel Corp 4525 W 160 St Cleveland 35 Ohio
 ●TRADE SERVICE PUBLICATIONS INC 341 E Ohio St Chicago 11 Ill—ADV PG 125

12W. PERSONNEL PROTECTIVE EQUIPMENT

1. Clothing
2. Eyeshields & goggles
3. Face shields & masks
4. Respirators
5. Safety belts & harnesses

Charleston Rubber Co Stark Industrial Park Charleston SC (1)
 DeVilbiss Co 300 Phillips Ave Toledo 1 Ohio (4)
 Dockson Corp 3839 Wabash Ave Detroit 8 Mich (2-3-4)
 General Hardware Mfg Co Inc 80 White St NY 13 NY (2)
 General Scientific Equipment Co Limekiln Pike & Williams Ave Philadelphia 50 Pa (1-2-3-4)
 Kedman Co 233 S Fifth West St Salt Lake City Utah (3)
 ●KLEIN (MATHIAS) & SONS 7200 McCormick Rd Chicago 45 Ill (5)—ADV PG 90
 Lincoln Electric Co 22801 St Clair Ave Cleveland 17 Ohio (2-3)
 Martindale Electric Co 1383 Hird Ave Cleveland 7 Ohio (2-3-4)
 Mine Safety Appliances Co 201 N Braddock Ave Pittsburgh 8 Pa (2-3-4)
 Plastex Protective Products Inc 156 Getty Ave Clifton NJ (1)
 Rose Mfg Co 2700 W Barbary Pl Denver 4 Colo (5)
 Schauer Mfg Corp 4500 Alpine Ave Cincinnati 42 Ohio (2)
 Smith Welding Equipment Div Tescom Corp 2633 4th St S E Minneapolis 14 Minn (2)
 Snyder (M L) & Son Inc 1897 E York St Phila 25 Pa (1)
 Standard Portable Cord Co Inc Mayville NY (2)

12X. MATERIAL PRICING SERVICE

Complete pricing information on all types of electrical equipment.

TECHNICAL LITERATURE

To obtain the following literature, enter the appropriate Code Numbers* on the Free Information cards elsewhere in this issue.

*Code No.	Description, Pages Catalog No. & Mfr.
12-1	Electric Hoists; 33p; Cat. No. H-61 (AE Industrial)
12-2	Rubber, Friction and Plastic Tapes; 8p (Accurate)
12-3	What Is Pressure Sensitive Tape? (Arno)
12-4	Anchoring & Drilling Devices; 48p; Cat. No. 72 (Arro)
12-5	Scaffolds; 20p; Cat. No. BR-78 (Baker-Ross)
12-6	Tree Trimming Equipment; 36p; Cat. No. 42 (Bartlett)
12-7	Linemen's Equipment; 80p; Cat. No. 456 (Bashin)
12-8	Splicing and Terminating; 12p (Bishop)
12-9	Electrical Tapes; 20p (Bishop)
12-10	Concrete Drill Anchors; 8p; Cat. No. BC-161 (Nelson)
12-11	Stud Driving System; 8p; Cat. No. N-360 (Nelson)
12-12	Electric Motor Bearings; 48p; Cat. No. 258 (Bunting)
12-13	Carbon Brushes; 88p; Cat. No. 60 (Carbon Engineering)
12-14	Pliers & Hammers; 16p; Cat. No. 361 (Champion DeArment)
12-15	Electric and Hand Hoists; 40p; Cat. No. H560 (Chester Hoist)
12-16	Motor Repair Shop Equipment; 12p; Cat. No. 501-3 (Crown)
12-17	Portable Electric Tools; 12p (Cummins)
12-18	Self-Drilling Shields; 4p (Diamond)
12-19	Safety Products; 38p (Ericson)
12-20	Pipe & Tubing Tools; 12p; Cat. No. 5906 (Erie Tool)
12-21	Balancing Machines; 18p (Gisholt)
12-22	Cable Grips; 24p; Cat. No. 60 (Kellems)
12-23	Pole Line Safety Equipment; 34p; Cat. No. 58A (Miller Equipment)
12-24	Heavy-Duty Electric Tools; 36p; Cat. No. G-61 (Milwaukee)
12-25	Pipe Tools; 24p; Cat. No. 61 (Nye)
12-26	Brushes; 160p; Cat. No. 19F (Ohio Carbon)
12-27	Scaffolding for Maintenance and Repair; 12p; Cat. No. PTS-18R (Patent Scaffolding)
12-28	Sectional Steel Scaffolds; 12p; Cat. No. PSS-34RR (Patent Scaffolding)
12-29	Metal Framing; 32p; Cat. No. 100-6 (Power-Strut)
12-30	Carbon Brushes; 34p; Cat. No. 56 (Pure Carbon)
12-31	Ramset Fastening System; 12p; Cat. No. B 141 (Ramset)
12-32	Anchoring and Drilling Devices; 12p; Cat. No. 700A (Rawlplug)
12-33	Tools; 128p; Cat. No. X (Snap-On)
12-34	Mechanical Jacks; 15p; Cat. No. 60 (Simplex)
12-35	Distribution Connectors & Installing Tools; 24p; Cat. No. UI-27 (Thomas & Betts)
12-36	Electrical Trade Book Sample; 32p (Trade Service)
12-37	Tools; 81p; Cat. No. 304 (Williams JH)

ANNUAL INDEX Vol. 60-61

July, 1961 through June, 1962

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Design, Construction Methods, Apparatus Service, and Specific Occupancies. The sixth section lists articles by authors' names.

Where an item or article is concerned with more than one main subject, it is indexed under each.

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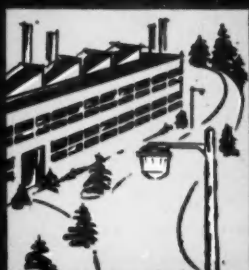
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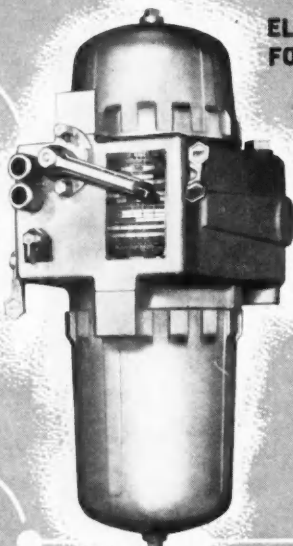
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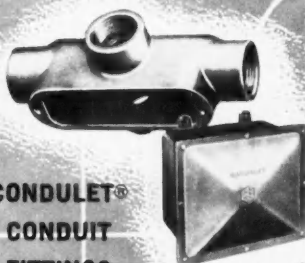
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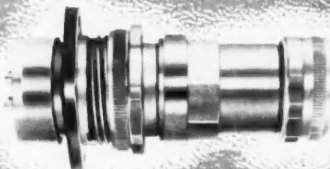
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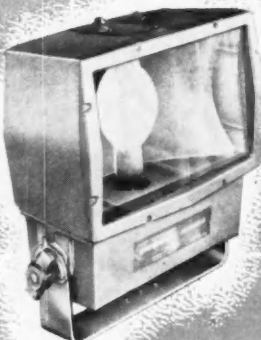


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